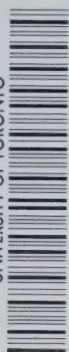


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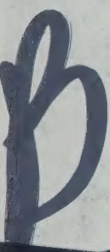


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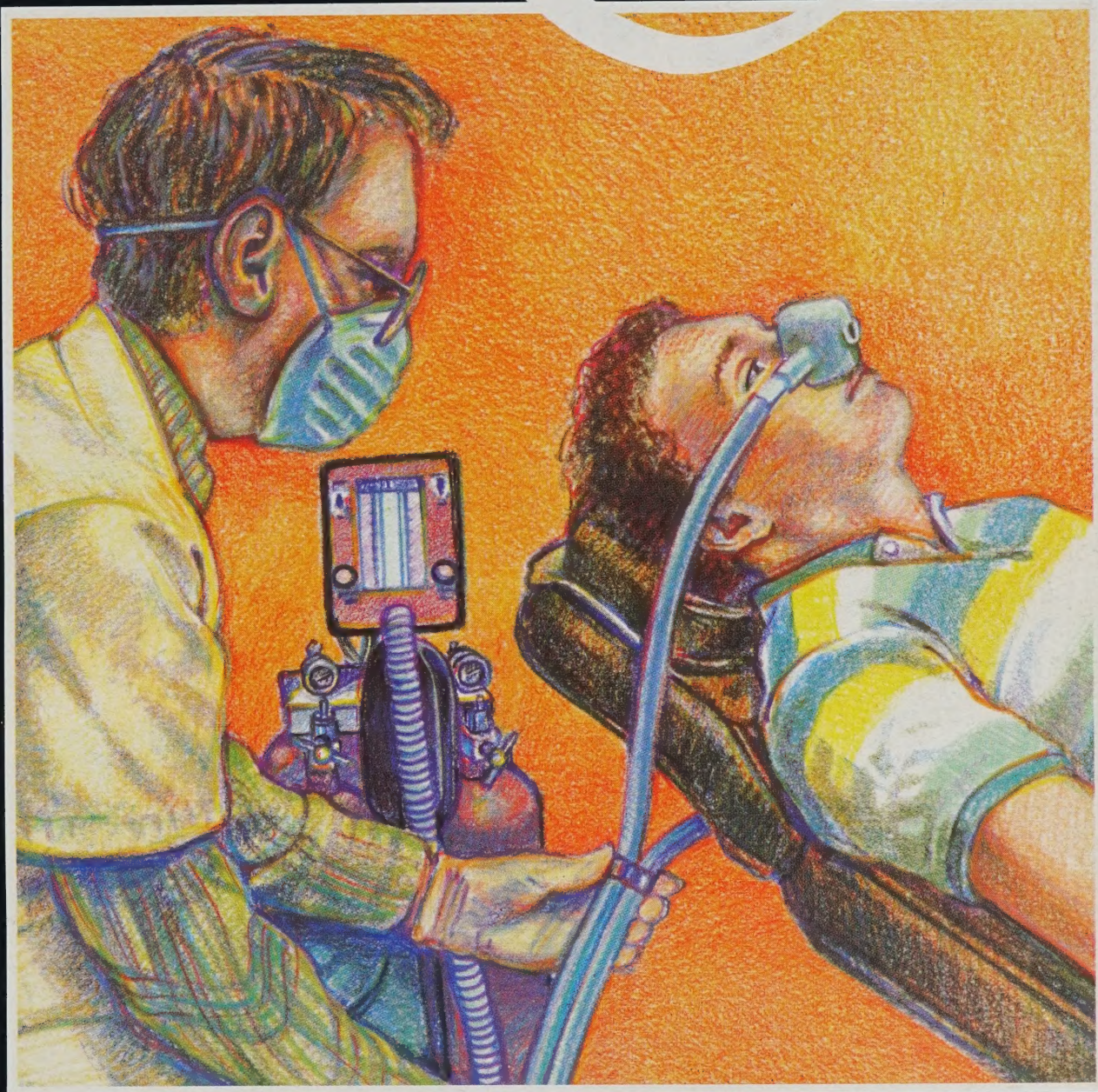


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CDA MISSION STATEMENT

The Canadian Dental Association serves the dental profession — and through the profession the Canadian public — as the authoritative national voice and resource for dentists.

In cooperation with the provincial dental associations and affiliated organizations, CDA offers services, in both official languages, intended to support and advise all areas of dentistry and to represent, protect, promote and develop the interests of the dentist as ethical practitioner, professional, educator, student, researcher, business person, citizen and individual.

CDA recognizes a particular responsibility to contribute to the development of national positions and standards related to dentistry, dental education, dental research, dental equipment, dental materials and dental personnel.

CDA is dedicated to the principle that all Canadians should have the best oral health care it is possible to provide; it actively seeks input from and dialogue with governments, consumers and all those interested in dentistry to enable it to serve more effectively both its members and the Canadian public.

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Canadian Dental Association
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July 1989

Vol. 55 No. 7

Clinical Features

The mechanisms of Nitrous Oxide scavenging devices	531	David Donaldson, BDS, FDSRCS, MDS G.D. Allen, MB, FFARCS
A comparison of the effectiveness of Nitrous Oxide scavenging devices	535	David Donaldson, BDS, FDSRCS, MDS J. Orr, (Pharm) MSc, PhD
The efficiency of Nitrous Oxide scavenging devices in dental offices	541	David Donaldson, BDS, FDSRCS, MDS J. Grabi, DDM

Scientific

Surface quality of gypsums when poured against alginates	545	Walter R. Teteruck, BSc, DDS, MSD, <i>et al</i>
Tooth loss in a selected population in Saskatoon	551	J.N. Hoover, BDS, PhD, <i>et al</i>
Dental insurance and its effect among the elderly in Ontario	555	David Locker, BDS, PhD, <i>et al</i>
Le polissage des résines composites: étude préliminaire par réflexion laser	561	Denis Robert, DMD, MScD

Departments

495	President's Column "What are your services worth?"
496	News Update
502	CDSPI Reports
504	Brieflies
520	Library/Resource Centre
521	Book Reviews
525	Letters to the Editor
527	Money Management
529	Practice Prosperity 1989
567	Announcements
569	Marketplace
572	Advertisers' Index
573	It's My Opinion: "New X-ray guidelines"



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What are your services worth?

The subject of dental fees-for-service is the topic of much discussion and controversy, in both professional and public form. Pressures for lower fees come from many sources, including government and consumer groups.

On the other hand, many dentists would argue that fees are already low, relative to other sectors of the economy. Office overhead and inflation have eroded the dentist's bottom line, and the real issue for today's practitioner is whether to maintain, lower or raise fees; and if fees are increased, what factors justify the increase?

In dentistry, a fee is basically a product of two variables: time and responsibility. It is important to establish a fee structure that allows each individual fee to represent a certain value. Also, there should be an interrelationship among fees, in order that they make sense with respect to each other. At the same time, a fee should allow flexibility, considering such factors as regional economies, and variations in aims and methods of practice.

I think we would all agree that a treatment that takes an hour to accomplish should cost more than one that takes 10 minutes. And if treatment involves a high degree of professional skill and responsibility, the fee structure should be flexible enough to respond.

If someone asks if all like services are equal in time and responsibility, the answer would have to be "no". We may have a patient with compromised health. Patient management problems, a demand for aesthetics, or just a plain tough case, all demand increased responsibility. When the responsibility increases, making it necessary to have a higher level of scientific knowledge to perform the procedure, or it requires additional professional judgement and skill, or if the risk increases — all this should be reflected in the fee.

This leads us back, then, to the question about the genesis of fees. They arise from all the services and skills required of a dentist. He/she accepts the total obligation to manage a case as well as is humanly possible, on a consistent basis. In saying this, we must understand that there are many variables. It is not true that fees for the same service are always identical.

Dentistry is a time-dependent, loving craft, as well as a science. It is an art that the person delivering the service must love and cherish. Therefore, each dentist must adjust his fees to promote excellence of service. Fair fees are in the best interests of not only the patients, but of dentists and the dental profession.

*Jack W. Niedermayer, BA, DDS
President of the Canadian Dental Association*

News Update

CDA Government Relations annual dinner and reception



Mr. Douglas J. Lindley, Associate Assistant Deputy Minister, Personnel, Department of National Defence, enjoys a bon mot with Dr. Don MacFarlane, a member of CDA's Board of Governors.

An annual dinner, held in conjunction with the Interim CDA Board of Governors meeting, is an aspect of the CDA Government Relations Program.

The mandate of the Government Relations Committee is to develop and maintain relations with senior federal government officials and Members of Parliament.

This year, for the first time, the CDA also held a reception as part of its government relations activities. The occasion provided CDA chairpersons an opportunity to personally meet their contacts in an informal setting.

The photographs which follow identify some of the government guests on this occasion. Δ



Mr. Brian Wurts, Chief of Sales and Excise Tax Group, Tax Division, Department of Finance, compares notes with CDA Taxation Committee Chairman, Dr. Robert Hicks.



Dr. Gillian Lynch, Director General, Indian and Northern Health Services Directorate, Medical Services Branch, Health and Welfare Canada, chats with the President of the Canadian Dental Association, Dr. Jack W. Niedermayer.



This group includes, from the left, Dr. Jack Niedermayer, President of the Canadian Dental Association; Dr. Alistair Clayton, Director General, Federal Centre for AIDS; Dr. John Hardie, a member of the National Advisory Committee on AIDS and Chairman of CDA's Publications Committee, and Dr. Ray Wenn, a member of the CDA Board of Governors and Executive Council.



Mr. T. David Nicholson, right, Assistant Deputy Minister, Medical Services Branch, Health and Welfare Canada, enjoys a joke with Dr. P. Ralph Crawford, Editor of JCDA.



Mr. Jardine Neilson, Executive Director of the CDA, left, and Dr. Jack Gryfe, Chairman of the CDA Government Relations, chat with Mr. Ray Laframboise, centre, who is Assistant Deputy Minister, Health and Welfare Canada.

Health and Welfare Canada's program for safer medical devices

Dental equipment and medical devices must meet high quality standards and pass rigorous testing and evaluation processes to ensure public safety. But, from time to time, a faulty item slips through the system — it breaks, bends or doesn't work when put to regular use — in spite of manufacturers' promises.

This is the reason behind the creation of the Medical Devices Problem Reporting program. The program was established in April 1987 by the Health Protection Branch of the Department of Health and Welfare.

Health and Welfare defines a medical device as "any article, instrument, or apparatus which is sold or presented for use in the diagnosis, treatment, or prevention of disease or abnormal physiological state, for correcting human body functions, or for contraception." Medical devices cover a wide spectrum; some examples are: dental instruments, sterilizers, anaesthetic machines, pacemakers, syringes, contact lenses, vaporizers and heating pads.

Toll-free 'Hot Line'

Health care professionals and members of the public are encouraged to report device failures, malfunctions and other concerns about medical devices, to the Branch's Bureau of Radiation and Medical Devices. A 24-hour toll-free Hot Line has been established, with bilingual staff to answer calls between 8:30 and 4:30 (Eastern time zone) from Monday to Friday, and an answering machine to handle calls outside of office hours.

In addition to the Hot Line, a mail-in problem report form is available, which may be used to outline the basic information necessary to carry out an investigation.

All calls are acknowledged and every report is reviewed. The extent of the subsequent investigation depends on the severity of the hazard. Health and Welfare Canada will notify the manufacturer of any medical device problems.

Input from health professionals brings about changes to labelling, design and manufacturing of medical devices. This feedback helps Health and Welfare set priorities, plan corrective action and establish preventive measures to reduce future incidents. Ongoing reporting helps to ensure that only safe and effective medical devices continue to be used in the delivery of health care to Canadians.

CDA in advisory role

Many people assume that CDA is responsible for testing dental materials and devices because of its recognition program. The CDA plays an advisory and consultative role in evaluating the non-

pharmacological aspects of dental materials and devices used in dentistry, but does not make unilateral judgements about product safety. This is the responsibility of the federal government, which has both the authority to set regulations and the responsibility to make judgements on public safety. CDA contributes to the development of standards for materials and devices, and to programs for testing and evaluation. However, it has no facilities or resources for conducting its own testing or for handling consumer complaints.

Health and Welfare Canada urges health professionals and members of the public to report any incidence of faulty medical devices and invites information inquiries. For information on the Medical Devices Reporting program, contact:

The Director, Bureau of Radiation
and Medical Devices
Environmental Health Directorate
Health Protection Branch,
Tunney's Pasture,
Ottawa, Ontario K1A 0L2

or call the Hot Line: 1-800-267-9675 Δ

September 1 is deadline for entries in FDI/Johnson & Johnson Awards

September 1st this year is the closing date for entries for the 1990 Johnson & Johnson Preventive Dentistry Awards and applications are invited now by the Fédération Dentaire Internationale (FDI), the world organization for dentistry, which administers the worldwide competition.

US\$ 8,000, donated by the Johnson & Johnson Dental Care Company of New Jersey, USA, is to be won, divided equally between two categories — Dental Research and Community Programmes.

Entries should describe a new approach to preventive dental health in one of these categories. The J & J Awards are a worldwide competition, open to any person working in the oral health field, with the exception of employees of the Johnson & Johnson Dental Care Company and the FDI.

International juries of experts will select the winners, who will be invited to receive their awards at the FDI Annual World Dental Congress in Singapore in September 1990.

Entries for the Awards have to be received at FDI Headquarters in London no later than 1st September, so do not delay.

The complete rules of the competition may be obtained from, and entries should be sent to: Dr. J.E. Ahlberg, Executive Director, Fédération Dentaire Internationale, 64 Wimpole Street, London W1M 8AL, UK. Δ

Did you know?

The "glitch" in your copying machine may be caused by mercury vapour. According to a report from the American Dental Association's Mercury Testing Service, elevated levels of mercury in the air amalgamates with the selenium on the copier drum causing malfunction. Another good reason to practise sound mercury hygiene procedures.

Quest:

Practice management or spiritual encounters?

By Rebecca Dufton, BA(Hons) *

Quest, a U.S.-based consulting group and promoter of New Age management philosophy, recently aroused concern in Winnipeg and prompted a full-scale inquiry by the Manitoba Dental Association.

Critics of Quest say it's a cult-like group that encourages dentists to make exorbitant profits from unsuspecting patients; that it creates unreasonable expectations, and "makes dentists money-mad."¹ They believe it has the potential to "give dentistry a black eye."²

Quest calls itself "an organization dedicated to the fundamentals of patient-centred dental health care."³ Followers say "it promises lower stress levels because of a happier working environment and increased revenues. The seminars teach dentists how to keep patients coming back for more and how to get new customers coming through the door."⁴ Dentists who follow the program can expect to double their incomes.⁵

For between \$9,000 and \$13,000 a year, Quest provides three to four seminars. Dr. William Blatchford, founder of Quest Canada West, says the company offers:

"ideal treatment planning diagnosis, how to schedule patients, how to spend time with them, and we really stress communication skills. . . We are out to improve the quality of dentistry. I'm teaching dentists to provide a complete treatment plan for each patient."⁶

Public accountability issue

A week-long series of articles on Quest in the *Winnipeg Sun* (April 9-13) raised the issues of professional ethics and public accountability. *Sun* staff reporter Donna

Carreiro conducted more than 20 interviews with patients, dentists, dental association officials and former employees of a Quest dentist, and heard allegations that patients have been subjected to unnecessary dental work, inappropriate billing and harassment by Questors.

One Winnipeg Quest dentist is under investigation for keeping an Autopac overpayment cheque. Two patients are fending off a collection agency seeking payment for dental treatment that was never authorized. Liberal health critic Gulzar Cheema called for a full inquiry by the MDA into Quest. In one article, Cheema demanded to know what was being done against the dentist and how Quest was allowed to get so far in Manitoba after seeing the Ontario dentists fighting it.⁷

For provincial dental associations and the CDA, the series confirmed rumours often heard about Quest, and provided the Manitoba Dental Association with information to begin an investigation.

On April 12, the MDA issued a public plea asking patients, dentists, and dental employees to come forward with information about the group Quest Canada West. ***At press time, the MDA was obtaining legal advice before proceeding with the full-scale investigation.***

Former employees of a Quest dentist told the *Sun* that their personal lives had been invaded and that Quest demanded total loyalty — from altering patient's records to participating in events like "costumed aerobics" in a parking lot.⁸

Other sources told the *Sun*, "Each morning began with a clearing meeting —

finding holes in the day's bookings and deciding how to fill them with extra appointments."⁹

'Emotion packed . . . experience'

Dental staff of Quest members usually become involved in the program. One subject told the *Sun* that the seminars "absolutely drain you." Another agreed, calling it "an emotion-packed, high-powered experience." A former dental assistant described a Vancouver seminar last year in this way:

"There was no free time away from each other. There was lots of hugging and kissing — it was almost like an evangelical thing — people would get up and confess the strangest personal things. It was like a soap opera."¹⁰

The Ontario Dental Association investigated Quest in 1987, and with it came a series of news articles on the organization.

Brampton dentist and Quest seminar leader Dr. Sam Axelrod was quoted in a 1987 *Brampton Times* article as saying:

"Quest is the only dental management course that goes a little deeper than just giving advice; we do tend to get under the skin of people."¹¹

This is exactly the sort of behaviour that worries cult expert Rob Tucker, head of the Council on Mind Abuse (COMA) in Toronto. He says that these ***seminars go beyond practice management and amount to an invasion of privacy, coercion, and mind-control.***

Tucker says seminar attendants are asked to fill out an extensive introductory questionnaire, often with as many as

* Ms. Dufton is a writer at CDA Headquarters, Ottawa.

200 questions on personal values (i.e. number of children planned, inclination to be jealous, view towards death and suicide, class distinctions, voting behaviour, etc.). In packed meeting rooms, leaders encourage attendants to share their most private experiences with others.

The technology used in cults has been transferred from the streets to the corporate world, and "it will get worse," says Tucker. He cites the United States, where corporations have signed up for New Age seminars to motivate their employees, fight low morale, beat international competition, and raise productivity — leading to lawsuits launched by unwilling employees.

Although dental staff have been fired for not adhering to the Quest philosophy, they do not usually stay to fight. They are hesitant to come forward with evidence — in the Winnipeg stories, all evidence was given anonymously.

U.S. legal precedents

However, according to Tucker, there are legal precedents in the U.S. to protect employees from employers who insist on participation in New Age programs.

Court cases in the U.S. have been won the following grounds:

- 1) Since New Age has a metaphysical foundation, (EST, which has elements from Zen, Occultism, Scientology and other metaphysical sources), an employer does not have the right to violate an employee's religious beliefs by insisting that he/she take these courses; and,
- 2) Most New Age programs demand that the individual surrender deep aspects of his/her personality to the group, which amounts to an unwarranted intrusion of privacy and a violation of employment contracts.¹²

Concerted action by the Ontario Dental Association in 1987 effectively shut down Quest's organized activities in that province. It began when three ODA members attended a seminar in 1986 and were concerned about what they heard. Associate Executive Director Dr. David Surplis says ODA was concerned on three levels:

"One of the seminars seemed to be preaching the benefits of assignment (when the patient signs over the dental benefits to the dentist), and there was an over-emphasis on crown and bridge

work. Secondly, we received calls from dental nurses, assistants and hygienists who had been fired from Quest offices for not going along with their practices. One woman worked for the only dentist in town and she went to the Human Rights Commission. This was not good for the image of dentistry and we wanted to avoid cases like this in the future. The third reason was that the Dentists at Risk Program (a program operated by the ODA to help dentists who are having emotional problems) was getting an influx of people also involved with Quest." ODA contacted Rob Tucker, director of the Council and Mind Abuse, for assistance. Tucker drafted a letter on Quest, which was sent to the ODA and reprinted in the *ODA News* (March 1988 issue).

Potential for burnout

Along with potential for effective practice management and increased profits, there is a potential for burnout, nervous breakdown and suicide. Tucker explains:

Some dentists, fuelled by Quest's ideas, build up a lot of energy and enthusiasm, only to come down hard when they realize they aren't going to do as well as they'd hoped. If a dentist makes investments on the basis of his hopes — equipment for example — his disappointment could be devastating.¹³

Typical candidates for Quest are intelligent, intellectually curious, well educated, ambitious, idealistic — "people who are looking for something," says Tucker. Generally, they have been in practice five to 10 years and are having some doubts; they are seeking a new direction, or a change of emphasis.

Dentist Dr. John Demarco, who is quoted in a *Brampton Times* article in 1987, is typical:

I've been in practice for 10 years, and before I took the Quest seminar I was ready to quit. I know Quest is controversial. But I think that's because it is new and different. There is some stress involved in changing the way you do business, but any change will involve stress.¹⁴

According to Quest Canada Director Pierre Brassard, only five per cent of Canadian dentists are Questors. The figure is 10 per cent in Quebec.¹⁵

The provinces are watching Quest activities with interest, but little else can

be done unless they find written evidence of professional misconduct.

Manitoba Registrar Dr. Michael Lasko says, "It is hard to pinpoint whether organizations like Quest are responsible (for ethical conduct). It is a question of how the individual assimilates and incorporates the information."

Dr. Lasko goes on to say, "It is not the licensing authority's job to keep records on the style of practice management seminars. It is almost an infringement of rights to dictate how an individual should manage his practice."

The general consensus of the dental associations and licensing authorities is that there are a large number of practice management consultants on the market today, and the best advice for every dentist is to check each course carefully before signing up. Dentists should ask to see the course material first and talk to other clients. Dental authorities caution to be very, very careful about the type of management guidance that is being offered. △

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Council on Mind Abuse letter describes Quest organization

Editor's Note: The following letter was sent to the Ontario Dental Association, and was subsequently published in an ODA publication, the ODA News. (March, 1988)

Quest is an organization which has recently attracted much attention in the dental community. It has inspired intense devotion in some, and equally intense repugnance in others. Just what is Quest?

As Executive Director of COMA, The Council On Mind Abuse, I have received dozens of calls from dentists and from dental support staff. From these calls and from further investigations, I have concluded that Quest uses recruitment methods and other techniques that are entirely consistent with our understanding of cultism.

Quest appears strongly connected to an organization called EST or Forum. This organization has been of deep concern to us for years, and is listed in every major book on cultism in North America. The techniques used in this organization develop a peculiar kind of devotion in its followers, which appears to outsiders as a kind of fanaticism.

This expresses itself in several ways: the new 'convert' attempts to recruit everyone he/she shows with exhortations about how fantastic, wonderful and helpful their experience has been. They seem to change in certain fundamental ways, and these changes are not always, according to others who know them, for the best. We receive many calls of concern on this point, and the pattern of changes observed and described to us fit completely with patterns of cult involvement familiar to us.

Once committed to Quest, an individual can develop incredible energy and drive in order to achieve their 'higher human potential'. Frequently, however, the energy leads to severe disruptions in the workplace through burnout and other forms of stress.

Symptoms common during the 'burnout' phase are: depression, feelings of isolation or loneliness, the inability to make crucial decision independently of the group, emotional and cognitive dysfunctions, and others.

Several support staff, in 'Quest offices', have reported that they have either quit or been fired for refusing to take this program. They find the program offensive, and are told that their reluctance to take it demonstrates their inadequacies and their inability to face the truth about themselves. This is precisely the approach that groups known as cults use to intimidate others.

An individual who becomes committed to a group like Quest can demonstrate patterns of behavior consistent with addiction. The addiction/dependency is sometimes so strong that the individual will pour incredible amounts of money into the programs offered to them. In other words, in order to keep the 'energy' or 'high' going strong, the individual must 'go back for more'.

Because of the powerful sales pressures applied by Quest salesmen, it can be difficult to refuse them. How can one refuse promises of greater health, wealth and happiness? I strongly recommend, however, that everyone approached by this organization search out more information about them. If, instinctively, you find yourself frightened by this group, if you see negative changes in others who have taken the course, you have a perfect right to feel this way, and you also have a perfect right to refuse involvement.

One final note: Quest is part of what has come to be called the 'New Age' in business. Employees in locations across the United States are now suing their employers who insist on New Age programs. The suits are based on the following positions:

- 1) Since New Age has a metaphysical foundation (EST for example, is based on Zen, Occultism, Scientology, and other mystical sources), an employer does not have the right to violate an employee's religious beliefs by insisting they take these courses.
- 2) Most New Age programs demand that the individual surrender deep aspects of their personality to the group. This is felt to be an unwarranted intrusion of privacy, and a violation of employment contracts.

The key processes used by these groups always involve trust and surrender. The question becomes, however, trust in what, and surrender to whom? I urge all readers to consider Quest very, very carefully before enrolling.

For more information, please feel free to call, at COMA (416) 484-1112.

Council on Mind Abuse Inc.
Box 575, Station Z,
Toronto, Ont. M5N 2Z6 Δ

It could mean life or death for my children.

I have Huntington's disease, a hereditary brain disorder which passes from generation to generation, causing slow physical and mental deterioration leading to total incapacitation and eventually ... death.

I'm scared of what lies ahead for me but I'm even more frightened of what the future holds for my children. Each one has a 50:50 chance of inheriting the disease. That is why, what you choose to do now could mean the difference between life and death for them.

Recently, through research funded by your dollars, scientists have discovered a 'marker' which will lead us to the defective gene and hopefully a cure for Huntington's disease. No doubt it will come too late for me but with your help it could come in time to save my children.

Please send your cheque today and help make this the generation that beats Huntington's disease... forever.

Mail to:

The Huntington Society of Canada,
Box 333, Cambridge, Ontario
N1R 5T8

☐ Enclosed is my cheque to help fight Huntington's disease.

☐ I wish to be a volunteer.

☐ Please send me further information.

Name _____

Address _____

_____ Postal Code _____

All donations will be acknowledged and a receipt for income tax purposes forwarded promptly.

Charitable Reg. #0464040-11-15



The Canadian Dental Association's 1988 audited financial report

The audited financial statements of the Canadian Dental Association were adopted at the Interim Meeting of the CDA Board of Governors in Ottawa, March 31, April 1, last.

The Balance Sheet and the Statement of Revenue and Expenses for the year ended December 31, 1988 have been extracted from the Auditor's Report and are here-with presented for your review. Copies of the complete audited statements as prepared by McCay, Duff and Company, may be obtained from the CDA Resource Centre.

Financial report notes

Assets

Current assets

Cash holdings were down from the previous year. This was the result mainly of the late start in the Membership Campaign within the voluntary provinces of Ontario and Quebec. Also, the CDA used some of its cash reserves to pay down the headquarters building mortgage of \$468,500.

Investments

At the end of 1988 there were no short-term investments. Normally, CDA would have significant monies prepaid for the coming year's membership fees, but the late start of the campaign delayed this. By January of 1989, more than \$1 million was subsequently received and invested. Coincidentally, the deferred revenue is lower, because there were no revenues to be set over to the following year.

Accounts receivable

Receivables increased in 1988, largely due to a single sum receivable from a corporate sponsor in relation to the Dental Awareness Campaign Corporate sponsorship. Some \$260,000 was owing on this one item.

Inventory

These figures are made up entirely of Dental Health Month and Dental Awareness Program materials. CDA has invested in a two-year supply of many items.

Canadian Dental Association Balance Sheet as at December 31, 1988

Assets		1988	1987
Current			
Cash	\$	372,830	\$ 505,888
Investments		—	1,190,568
Accounts receivable		387,606	167,019
Inventory		95,475	57,022
Prepaid expenses		82,651	65,807
		<u>938,562</u>	<u>1,986,304</u>
Fixed			
		<u>1,219,443</u>	<u>1,287,470</u>
		<u>2,158,005</u>	<u>3,273,774</u>
Trust Assets			
Cash		141,223	33,673
Accounts receivable		402	41
Prepaid expenses		7,998	8,010
Library books and furniture (at nominal value)		1	1
		<u>149,624</u>	<u>41,725</u>
	\$	<u>2,307,629</u>	<u>\$ 3,315,499</u>
Liabilities			
Current			
Accounts payable	\$	496,104	\$ 264,361
Deferred revenue		55,582	976,978
Current portion of long-term debt		—	27,000
		<u>551,686</u>	<u>1,268,339</u>
Long-Term Debt			
		<u>—</u>	<u>441,337</u>
		<u>551,686</u>	<u>1,709,676</u>
Equity			
Surplus			
		<u>1,606,319</u>	<u>1,564,098</u>
		<u>2,158,005</u>	<u>3,273,774</u>
Trust Equity			
Building Contingency Reserve Fund		28,505	—
Convention Reserve Fund		89,320	—
Library Trust Fund		24,019	34,483
The Grieve Memorial Lectureship Fund		7,780	7,242
		<u>149,624</u>	<u>41,725</u>
	\$	<u>2,307,629</u>	<u>\$ 3,315,499</u>

Fixed Assets

Book value — CDA's land, building and contents, at 1815 Alta Vista Drive, in Ottawa.

Liabilities

Current Liabilities

Accounts Payable

A high number of invoices received late in the year caused an increase, amongst which were amounts of some \$150,000 payable to Manifest Communications for the Dental Awareness Program.

Deferred Revenue

As noted above under investments, deferred revenue is down as a result of the late start in the 1989 membership campaign in the two voluntary provinces.

Long Term Debt

The mortgage on the CDA headquarters building was paid down in full during 1988.

Equity

Surplus

The modest increase in the Association's equity, or surplus, was due to the operating surplus of \$69,073 in 1988.

Trust Equity

An increase of more than \$100,000 related to two main factors. The building contingency fund was transferred to an equity account to better detail the fact that this money has been set aside, plus CDA set up a convention reserve fund in 1988 to assist in the funding of future conventions. △

Did you know?

Excessive body fat is a complex health problem in Canada, affecting between 26 to 39 per cent of adults over the age of 20, and 5 to 25 per cent of children. The Canadian Dietetic Association in a recent article "Obesity: A Case For Prevention" reports that men between the ages of 20-24 years showed a pronounced increase in body fat, with a plateau in weight by age 45-54. A similar age related increase was evident in women but without the weight plateau.

Just another reason for more participation.

Canadian Dental Association Statement of Revenue and Expenses for the year ended December 31, 1988

	1988		1987
	Budget	Actual	Actual
Revenue			
Fees	\$ 2,745,638	\$ 2,835,495	\$ 2,551,635
Other	1,185,963	1,218,240	1,104,363
	3,931,601	4,053,735	3,655,998
Expenses			
Executive Services	505,335	473,903	507,673
Professional Services	406,171	349,269	335,301
Member Services	1,053,835	1,237,483	1,054,611
Administration	1,962,370	1,924,007	1,720,789
	3,927,711	3,984,662	3,618,374
Excess of Revenue over Expenses for the year	\$ 3,890	\$ 69,073	\$ 37,624

CDA Retirement Savings Plan

Unit values: (Funds are valued weekly)

Fund	Unit values as at	
	May 31, 1989	April 30, 1989
Bond & Mortgage Fund	67.21375	65.85399
Common Stock Fund	15.78892	15.44804
Money Market Fund	44.66857	44.24766
Balanced Fund	28.18021	27.57263

G.I.C. Fund Term	*Interest rates as at	
	May 31, 1989	April 30, 1989
1 yr	11.40%	11.80%
2 yr	11.10%	11.50%
3 yr	10.85%	11.00%
4 yr	10.65%	11.00%
5 yr	10.65%	11.00%

(*rates subject to change without notice.)

Total Assets (Market value) of the Plan as of:

May 31, 1989	April 30, 1989
\$110,068,749	\$109,131,255

For further information:

Write:



CDA RSP

CDSPI

Retirement Services Dept.
Suite 600
2 Lansing Square
Willowdale, Ontario
M2J 4Z3

or phone, toll-free:

Western and Atlantic Canada
and Ontario Area Code 807
only 1-800-268-5418
Quebec and Ontario, (except Area
Code 807) 1-800-268-3411
Metro Toronto Area 497-7117

First Teeth Program:

A get re-acquainted offer

First Teeth, the immensely successful program for parents of children up to age nine, is swinging back into action with a special offer for dentists.

When First Teeth was initially made available, over 10,000 dentists took advantage of the offer to add it to their patient communication efforts. Through a comprehensive and lively booklet, and a growth chart for the kids, First Teeth introduces parents to the essentials of good dental health care for their young children.

The high demand for First Teeth quickly exhausted the CDA's supply of materials. As a result of an agreement with Colgate-Palmolive Inc., (corporate sponsor of First Teeth), the CDA will be distributing, free of charge, 25 booklets and growth charts to all dentists who initially ordered First Teeth. This special "get re-acquainted" offer extends only to those dentists who have ordered First Teeth kits previously. Distribution will begin this month, and will be completed by the end of August.

First Teeth is also available for sale through the Canadian Dental Association's Order Section. For CDA members, twenty five kits, each containing one booklet and growth chart, costs \$25.00 (\$50.00 for non-members). Fifty kits costs \$40.00 for members, \$60.00 for non-members.

First Teeth Office Kits are also available. The Office Kit explains how to best use the First Teeth booklet and growth chart in the clinical setting. Each Office Kit contains a poster suitable for mounting in the waiting room, a First Teeth booklet, a growth chart, and a communications guide. Each office kit costs \$15.00 for CDA members, \$30.00 for non-members.

First Teeth is a great way to educate the parents of your young patients. Make it a part of your communication efforts.

New Catalogue — Order Yours!

The CDA offers you the tools you need to inform your patients about dental health through a new 8-page catalogue. The 1989/90 Catalogue appeared for the first

FIRST TEETH

*A Dental Health
Care Booklet
for Parents
of Children
up to age 9*

CANADIAN DENTAL ASSOCIATION

5 3/8" x 8 3/8" / 24 pages

time in the *Journal's* May issue. If you missed it, or would like another copy, call us toll-free:

1-800-267-6364 (Eastern Canada
except area code 709)

1-800-267-6354 (Western Canada
including area
code 709)

New in this year's catalogue are materials designed specifically for your professional development. We can help keep you up to date on items such as infection control, direct reimbursement, and dental practice management.

Order your free catalogue today! Δ



Saskatchewan Health Minister supports program



During the National Dental Health Month campaign the Hon. George McLeod, Minister of Health for the Province of Saskatchewan, left, helped dental auxiliary group representatives, centre, and Dr. Keith Hamilton, President of the College of Dental Surgeons of Saskatchewan, to prominently display a "Keep Smiling" banner. Δ

JCDA has been advised that volunteers for Israel are needed to fill requests by Kibbutzim and clinics in deprived areas of that country. The American Volunteers for Israel has been answering these needs since the early 1970s, and to date has sent well over 1,500 dentists and dental hygienists.

Housing for a family and all the facilities of the Kibbutz are exchanged for 20 hours of work per week. Volunteers find this an unusual experience and a fulfilling opportunity to experience Israel by living with her people.

The program runs all year. It is recommended that a volunteer should plan to stay about three to four weeks.

The Chairman, Dr. Paul Jarmon, notes that this is not the DVI Children's Dental Clinic. The American Dental Volunteers serve mainly the Kibbutzim.

For further information contact:
Dr. Paul Jarmon, Chairman, 108-13
67th Rd., Forest Hills, New York 11375
U.S.A. or phone 718-263-4918. Δ

The Ontario Society of Orthodontists has changed its name to the Ontario Association of Orthodontists. The membership approved the change at the recent general meeting. The change from Society to Association is in keeping with the terminology of the ODA, CDA, CAO, AAO and the names of the various state organizations in the United States.

Officers were also elected to the executive board of the Association to serve for the 1989-90 session.

Dr. Alan Crawford of Sault Ste. Marie was named President. Dr. Arlene Dagys of Scarborough, Ontario is now serving as the Vice-President. Dr. Paul Levin of Mississauga, is the Past-President and Dr. Edmund O'Neill of Kingston, is the Secretary-Treasurer. Δ



CDA's Executive Director, Jardine Neilson, left, and fellow staff members at CDA headquarters in Ottawa, recently bade farewell to a popular colleague, Kathy MacTaggart. Mrs. MacTaggart was a familiar figure to many dental personnel, when she manned CDA's booth at CDA conventions and provincial gatherings. She was known to many others as the pleasant voice on the telephone when they ordered pamphlets and other CDA publications from headquarters. Δ

CDSPI Reports. . .

I should have started sooner

It was ten o'clock in the evening. John, with a very successful dental practice in South-Western Ontario, was in his den doing some diagnostic work for patients he would be seeing the next day. All at once there was a nauseous feeling and a heavy pain — then panic and fear.

The next morning John found himself in hospital and learned he had suffered a stroke. He was 45 years of age.

Now, for the first time in his life, John was inactive. He had always thought himself invulnerable and that strokes, heart attacks and other ailments, or any type of disability, would always happen to someone else. In John's mind he would continue to practice dentistry "until sometime in the future" when he would retire.

Retire, he repeated in his mind. He had never really given it a great deal of thought, he could always plan his retirement "tomorrow". But in John's case, there were almost no tomorrows to look forward to.

A week after his stroke, John realized the value of friendships. Colleagues in the area banded together and decided that they would attempt to maintain his practice by each taking half days to look after his patients until he had fully recovered. He had this urge to get out of bed and go back to work, but he realized that was impossible. He also realized that he would probably have to revamp and look at his whole lifestyle from a different point of view from now on.

During his recovery period he did just that. John thought about his life and his future in or out of dentistry in the event that he could never practice again. The questions came quickly. What would Mary do if he died or was fully disabled? Of course this was the last thing he wanted to happen but he had to think about it. Would she have sufficient funds to carry on a comfortable life? What about the children? Is there sufficient money to finish their education? How will they be able to afford houses in this day and age? Question after question came and went, and in many cases there were no clear answers.

What about he and Mary once the children had grown and moved out? What was life to hold for them? Oh sure, they

had talked many times about the traveling they wished to do, the places they wanted to see, but no really hard plans had been developed. It would "just happen".

Belated life plan

It was during this time that John realized how little time he had spent addressing his retirement plans or even his long term life plan in general. It had not taken long to make the commitment that he would now start to plan for the later years.

During and since John's recovery, he has read and taken seminars to learn about the importance of planning and the comfort it gives you by way of relieving the stress and uncertainty of knowing that he and his family are taken care of, regardless of how the situation should unfold.

One of the things John discovered is that he had left it rather late to start putting a retirement plan into action. The common question of when should retirement planning start should be asked by all dentists. The best answer is as early as possible, literally when the first patient pays the first dental bill. John came to believe that no matter how small a start, as soon as a dentist commences to practice, he should start planning for the day that he leaves the profession. In many

cases, individuals don't take retirement planning seriously enough until about age 45 or 50. In some instances, this can be too late, as John almost found out.

Plan now in action

John is 58 now, and over the past dozen years his retirement plan has fallen in place. He now knows he will have the option of retiring in another two years if that is his wish. He put his plan into action as soon as he was out of the hospital and he has looked at his plan once a year since then without fail. In hindsight, John wonders why it took him so long to get around to addressing this important part of his and Mary's life.

John still maintains a successful practice but he does not go at it quite as hard as he used to. He and Mary have a great deal of confidence in what the future holds for them as the planning was a joint effort. They have something to look forward to, as they will be doing things that they enjoy doing together as well as following their individual interests.

You may not know John, but should you ever run into him at a society meeting or at a convention and the topic gets around to health and retirement planning, you will get an earful of the importance of starting to plan early — with your first patient. △

CDIP Basic Life Insurance Claims

In 1988 the Basic Life plan of the Canadian Dentists' Insurance Program (CDIP) received fourteen death claims and paid \$1,445,500 in benefits. For the 11 non-smokers, the age of death ranged from 25 to 78, with an average age of 53. There were three smokers, aged 38, 58 and 71 (average age 56). Benefits paid ranged from \$3,000 to \$419,000 with an average payment of \$123,800.

These figures are compared below to those from the previous three years. The first table shows the pattern of benefit payments.

Year	Number of Claims	Total Benefits	Lowest Payment	Highest Payment	Average Payment
1988	14	\$1,445,500	\$ 3,000	\$419,000	\$123,800
1987	21	4,064,000	16,000	410,000	193,500
1986	16	1,559,500	2,500	364,000	111,400
1985	14	1,237,000	6,500	369,000	88,400

In 1987 the Plan experienced its highest level of claims in both number and size of benefit payments. Aside from 1987, the average payment appears to be gradually increasing, as the average coverage level of participants rises.

The following table shows the causes of death since 1985:

<u>Cause of Death</u>	<u>4-Year Total</u>
Cancer	25
Cardiovascular Problems	24
Suicide	7
Accident	7
Other	<u>2</u>
	65

These death claims can also be broken down by whether or not the person smoked. On an age basis, few differences are observed:

<u>Year</u>	<u>Number of Claims</u>		<u>Age Range</u>		<u>Average</u>	
	<u>Non-Smoker</u>	<u>Smoker</u>	<u>Non-Smoker</u>	<u>Smoker</u>	<u>Non-Smoker</u>	<u>Smoker</u>
1988	11	3	25-78	38-71	53	56
1987	10	11	39-74	43-66	53	56
1986	8	8	29-64	26-70	45	66
1985	6	8	38-65	48-70	52	63

On the other hand, differences in the cause of death over the same four-year period are obvious:

Smokers

<u>Number</u>	<u>Cause</u>	<u>%</u>
13	Cancer	43)
14	Cardiovascular	47) 90%
2	Accident	7
<u>1</u>	Other	<u>3</u>
30		100

Non-Smokers

<u>Number</u>	<u>Cause</u>	<u>%</u>
12	Cancer	34)
10	Cardiovascular	29) 63%
5	Accident	14
7	Suicide	20
<u>1</u>	Other	<u>3</u>
35		100

As at December 31, 1988, 9,073 participants were insured for an average of \$190,606 under the Basic Life Insurance Plan of CDIP. As at March 31, 1989, 15 per cent of the Basic Life participants were smokers. Δ

(Statistical information provided by Imperial Life Assurance Company of Canada.)



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Vancouver 1989

Convention Countdown: Last Call



At CDA, the convention countdown fever is high! Our offices have literally been hit by a tornado called "THE 1989 CDA CONVENTION", which is reshuffling papers, deadlines and ... staff! Seriously, though, we are investing a great amount of time to create the New Look of CDA Conventions and are convinced that the results will be well worth the effort!

Yes, this is your **last** chance to pre-register for the convention! If you have

not been avidly reading all the material published on the Vancouver CDA Convention to date, let me try to explain, in a nutshell, what it is all about.

PRE-CONVENTION

August 25 & 26 • 4 courses

Why should you register for a pre-convention course? The low registration fees allow you to attend a lecture on a subject of great importance to your practice - in the quiet of the pre-convention atmosphere, without the hustle and bustle of the convention and exhibits. Registration also includes lunch.

CONVENTION

August 27, 28 & 29 • over 40 lectures + 240 technical exhibits

Attending at 2 1/2 convention can be fruitless ... or rewarding! The difference lies in how you are able to **plan** the sessions you wish to attend and therefore take full advantage of what is being offered. At the CDA convention in Vancouver, you will be given a choice of over 40 lectures, 30 table clinics, and 240 exhibits to visit.

Dental hygienists and assistants will have an even greater choice, since special programs for them have been organized by the CDAA and BCDHA. We hope your staff will join you in your learning experience.

If you also intend to bring the youngest members of your family, and they are over 5 years old, the Committee will baby-sit for you! Monday, your children will be thrilled to visit the Science Fair, which will be followed by a 3-D presentation at an IMAX theatre. Tuesday, they will be excited to meet the beluga whales at the Aquarium in Stanley Park and later view a film on earth satellites and galaxies at the Planetarium. And since all children love to pick-nick, box lunches have been arranged on both days.

For evening fun, an elaborate social program has been designed for you, your staff and your family: The Opening Ceremony on Sunday promises to be a spectacular event for all participants. Carnival Night will capture your imagination in a festive atmosphere of games, music and ... your favorite junk food! Lastly, the Black and White evening will give both couples and singles the opportunity to dine and dance to the sounds of a 20 plus piece big band. Black and white attire is encouraged!

Now that you know what the CDA convention in Vancouver is all about, why don't you join us and prepare yourself to meet the challenge of the 1990's!

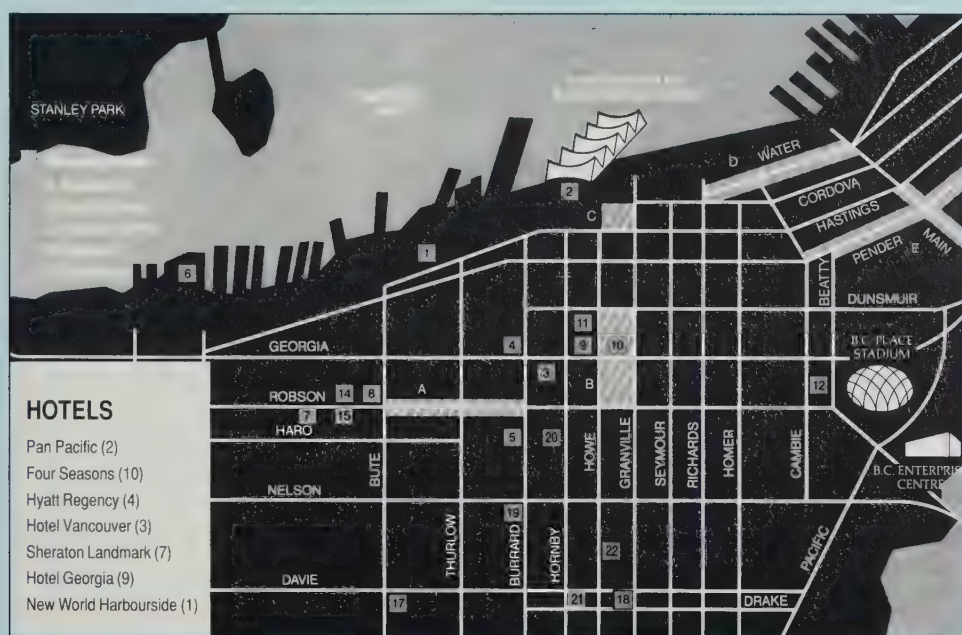
Fill out the advance registration form, appearing in this Journal, today!

Although the deadline is July 17th, I promise you that we will accept all forms postmarked July 30th.

You may, however, be the type of person who thrives on last-minute decisions! If this is the case, you are still welcome to attend the convention. There will be on-site registration which, as already mentioned, is subject to a \$25.00 administrative charge.

See you in Vancouver!

Dr. Michel Jahjah,
General Chairman
CDA Conventions



Downtown Vancouver

Vancouver 1989

CDA Scientific Program

Dentists ▪ Hygienists ▪ Assistants ▪ Office Personnel ▪ Spouses

Saturday August 26 9:00a.m.-12:00p.m. 1:30p.m.-5:00p.m.	BALLROOM A R. Jordan Composites	Rooms 8 & 15 I.A. Roseman Endodontics (Hands-on)	BALLROOM B LUNCH			
Sunday August 27 9:00a.m.-12:00p.m. 1:30p.m.-5:00p.m.	Rooms 1, 2 & 3 L. Miles Practice Management	Rooms 8 & 15 M. Goldfogel Cosmetic Dentistry (Hands-on)	BALLROOM B LUNCH			
Monday August 28 8:30a.m.-11:00a.m.	BALLROOM B C. Bain Periodontics	ROOM 1 P. Boudrias Implants	ROOMS 2&3 T. Snyder Computers	ROOMS 8 & 15 I. Vogan Stress	ROOM 11 Grieve Memorial Lecture Michael Wainwright Orthodontics	ROOM 12 Oral radiology Workshop
Monday August 28 1:30p.m.-4:00p.m.	J. de St. Georges Practice Management	P. Goldberg & M. Werbit Implants	L. Cheevers Forensic Dentistry C. Clark Ethics	E. Ambrose Restorative Dentistry	K. Zakariasen Endodontics	Oral Radiology Workshop
Tuesday August 29 8:30a.m.-11:00a.m.	BALLROOM B J. de St. Georges Practice Management	ROOM 1 G. Lavigne Myofacial Pain	ROOMS 2&3 D. Miles Oral Pathology	ROOMS 8 & 15 T. Myers Lasers		
Tuesday August 29 2:00p.m.-4:30p.m.	D. Federick Post & Core	P. Goldberg & M. Werbit Surgery	T. Snyder Computers	J. Molinari Infection Control	B. Williams Orthodontics	BALLROOM A P. Robertson Periodontics W. McDonald Med. Emergencies G. Gibson Hosp. Geriatric
Wednesday August 30 8:30a.m.-11:00a.m.		ROOM 1 J. Molinari Hepatitis B & AIDS	ROOM 2 R. Tucker Fixed Prostho K. Neuman Imaging G. Matheson Remov./Fixed Prostho.	ROOM 3 J. Epstein HIV & Hepatitis	ROOM 8 D. Federick Temporization	ROOM 15 F. Weinstein Bleaching Endotec

Vancouver 1989

Programme scientifique

Dentistes ■ Hygienistes ■ Assistantes ■ Pers. Administratif ■ Conjointes

Sunday, Aug. 27

Monday, Aug. 28

Tuesday, Aug. 29

OPENING CEREMONY EXHIBIT C 5:00p.m. - 7:00p.m. Carnival Night BALLROOM A, B, C or OUTDOORS 7:30p.m. - 10:30p.m.	Exhibits MULTIPURPOSE A & EXHIBIT B 9:00a.m. - 6:00p.m. EXHIBIT C - Lunch 11:00a.m. - 2:00p.m. Black & White Evening BALLROOM A, B, C Cocktails 7:00p.m. - 8:00p.m. Dinner/Dancing 8:00p.m. - 1:00a.m.	Exhibits MULTIPURPOSE A & EXHIBIT B 9:00a.m. - 6:00p.m.
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SPOUSES

FRANÇAIS

HYGIENISTS

ASSISTANTS

		ROOM 13 Lectures Room 14 Aerobics		BALLROOM A D. Miles Radiology	BALLROOM C Round Table Discussions Lunch
			ROOM 17 P. Boudrias Implants osseointegrés	C. Bain Periodontics	C. Anderson Personality Profiles
		ROOM 13 Hospitality Room 14 Aerobics		BALLROOM A J. Epstein Medically Compromised Patient	Refer to General Program
BALLROOM B Table Clinics	BALLROOM C CFDE Lecture Allan Fotheringham	BALLROOM C CFDE Lecture Allan Fotheringham	ROOM 17 G. Lavigne Douleur myofaciale	Refer to General Program	Refer to General Program
		ROOM 13 Hospitality Room 14 Aerobics		Refer to General Program	ROOMS 11 & 12 A. Gladstone & L. Bolson Stress

Vancouver 1989

Dental Assistants

CDA

Scientific Program

Registration to the convention gives access to the entire scientific program. In addition, the following is the CDA scientific program. Social events are open to all by purchasing the appropriate ticket.

Monday, August 28

8:30 a.m. - 11:00 a.m.

Round Table Forum, topics to include:

- ethics and importance of proper dental charting
- asepsis of handpieces
- rubber dam placement
- pit and fissure sealants
- impression materials

1:30 p.m. - 4:00 p.m.

Claudia Anderson

"The Art of Caring for Patients Professionally"

Using personality profiles to define your own style.

Wednesday, August 30

8:30 a.m. - 11:00 a.m.

Panel Discussion with Arlene Gladstone and Li Bolson

"Stress, Success and Excellence"

Work vs. home, present and ongoing challenges for women of the 80's and 90's

Dental Exhibits

More than 240 Exhibits

Over 240 exhibits will be featured, highlighting the latest in professional equipment and supplies. To allow more time to visit this important part of the convention, the schedule for the scientific program has been designed with plenty of free time over the lunch hour and at the end of the day.

Take full advantage of the opportunity to meet with your industry partners, who are an important part of the dental health care team!

LEARN • BUY • COMPARE • BROWSE

Monday & Tuesday 9:00 a.m. - 6:00 p.m.

Dental Hygienists

Scientific Program

in Collaboration with the BCDHA

Registration to the convention gives access to the entire scientific program. The following is an outline of the scientific program which is of special interest to dental hygienists. Social events are open to all by purchasing the appropriate ticket.

Monday, August 28

8:30 a.m. - 11:00 a.m.

Dr. Dale Miles

Director, Graduate Program

School of Dentistry, Indiana University

"Radiology for the Dental Hygienist"

- concepts for the '90s"

1:30 p.m. - 4:00 p.m.

Dr. Crawford Bain

Assistant Professor of Periodontics

Dalhousie University

"Periodontal Update for Dental Hygienists"

Tuesday, August 29

8:30 a.m. - 11:00 a.m.

Dr. Joel Epstein

Division of Dentistry

Cancer Control Agency of British Columbia

"Periodontal and Gingival Involvement in Medically Compromised Patients"

Vaccination Clinic

Engerix®-B

Hepatitis B Vaccine

(recombinant)

With the cooperation of Smith Kline and French, a vaccination clinic against Hepatitis B virus will be offered to dentists, hygienists, assistants and technicians at a special rate for CDA Convention participants.

This 3-dose program includes the injection of a first dose on site and the mailing of the 2nd and 3rd doses after the convention.

If you have already been vaccinated, the National Advisory Committee on immunization feels that booster after 5 years may be prudent.

ON SITE REGISTRATION ONLY

Vancouver 1989

Social Program

OPENING CEREMONY

Sunday, August 27

5:00 p.m. to 7:00 p.m.

Sponsored by "EURODENT"

Held for the very first time at a CDA convention, the Opening Ceremony is sponsored by EURODENT, the dental equipment and instrument manufacturer, who warmly invites all participants to attend this truly exciting and spectacular event.

The Ceremony was created this year to inaugurate the "New Look" of CDA conventions. Following an address by the President of the Canadian Dental Association, you will be entertained, for two hours, by some of the Internationally renowned performers who helped put Expo '86 into the "limelight".

In a theatre-like setting, more than 100 performers will participate in a multi-cultural presentation, which will begin at 5:00 p.m. and will end with a review by the internationally acclaimed Canadian performer, Leon Bibb.

Many other surprises await you at the Opening Ceremony, which is included in your registration fees. All dentists, hygienists, assistants, administrative staff, spouses, children and exhibitors are invited and truly welcome to attend. Nevertheless, seating is limited and, as the saying goes ... first come, first served !

CARNIVAL NIGHT

Sunday, August 27

7:00 p.m. to 10:30 p.m.

Immediately following the Opening Ceremony, the festive mood will be carried into an evening which is themed around an amusement park. Games, street performers and a live band will highlight this fun-filled event. Weather permitting, Carnival Night will be held outdoors, under the stars, at the Vancouver Trade & Convention Centre. Weather "not" permitting, a room has been set aside for us indoors. No risk attached !

This evening is a ticket item and is offered to you at a special rate of \$10.00 (food not included in price of ticket). Your admission allows you to participate in the games. Your favorite quality junk food will also be available, so bring your family, your friends ... or come alone and join the crowd !

Since attendance for this event is limited, only the first 1000 guests will be admitted. So, don't miss it !!

BLACK & WHITE

Monday, May 28

7:00 p.m. to 8:00 cocktails

8:00 p.m. onwards dinner and dance

The theme evening for the Convention will be an event suitable to the exquisite setting of the Vancouver Trade and Convention Centre. The black and white theme will continue into the decor and the food. The music for the evening will be provided by a twenty plus piece big band who will be relieved by a soft rock group as the evening progresses. The food, the music and the ambience will make this an evening to be remembered for years to come.

Black and white attire is encouraged; formal dress is optional.

If you have never been to a black and white evening before, this event is an absolute must !

Vancouver 1989

Spouses Program

Monday, August 28

Breast Cancer Lecture Plastic and Cosmetic Surgery Lecture and Lunch

The day starts at 9:00 a.m. with coffee and muffins, followed by an informative lecture on breast cancer given by Dr. Joanne Emerman. Our second presentation features Dr. Richard Warren who will discuss the latest techniques and procedures available to patients today in plastic and cosmetic surgery. Lunch will follow in the Pan Pacific Hotel's scenic Prow Restaurant, overlooking beautiful Burrard Inlet and the breathtaking North Shore Mountains.

Tuesday, August 29

Sea Bus to Shopping and Lunch

The Sea Bus passenger ferry departs at 9:00 a.m. for Lonsdale Quay, located across Burrard Inlet on the North Shore of Vancouver Harbour. Here you will encounter many shops and services as well as an open market. Browse until 12 noon, at which time lunch will be served at Loops Restaurant in the Lonsdale Quay Hotel. The day winds up at 2:00 p.m. with the return crossing by Sea Bus to the Vancouver Trade and Convention Centre.

Wednesday, August 30

Your Lifestyle, Your Choice. How healthy are you? and Breakfast

Meet for coffee and muffins this morning at 9:00 a.m. and stay to listen to an exciting lecture presented by Ms Susan Chernov of the Fitness Group in Vancouver. Ms Chernov's lecture entitled "Your Lifestyle, Your Choice. How Healthy are you?" will run until around 11:00 a.m., rounding off the spouses' program.

Children's Program

Free yourself up to enjoy the convention's lectures, exhibits, and spouses' program. Leave your children aged five years and over in the care of Diane Markey, Chairperson, and her committee, who will offer them an informative and entertaining two day program.

Monday, August 28

Science Fair IMAX Theatre and Lunch

Buses leave the Vancouver Trade and Convention Centre at 9:00 a.m. for the Science Fair at the former site of Canada's World Exposition, EXPO '86. Here, the children will participate in a brand new hands-on exhibit. After a box lunch, the buses will take them to the IMAX theatre at the Convention Centre where they will be entertained by their latest 3-D film presentation.

Tuesday, August 29

Aquarium Planetarium and Lunch

Buses leave the Vancouver Trade and Convention Centre this morning at 9:00 a.m. Our first stop will be the Vancouver Aquarium in beautiful Stanley Park, where the children will be treated to a tour of the Aquarium. As well as seeing the variety of marine life on display, they will have the opportunity to take in the beluga whale and killer whale shows. The next stop is the H.R. MacMillan Planetarium in Vancouver's Vanier Park. Box lunches will again be served before viewing the Planetarium's latest film presentation entitled "Eye in the Sky", an exciting look at earth satellites and the galaxies.

Vancouver 1989

Draws / Prizes / Draws / Prizes

EARLY-BIRD DRAW

2 AIR CANADA AIRLINE TICKETS

By special request, the early-bird draw is now open to all dentists, hygienists, assistants and office personnel who pre-register before **July 17, 1989**. The lucky winner will receive two airline tickets to any Air Canada destination in Europe and North America!

EXHIBITS DOOR PRIZES

CAR

Healthco and Honda Canada will be giving away a Honda car. All registered dentists, dental assistants, dental hygienists and office personnel can qualify for the draw by filling out the appropriate form in the Exhibit Hall. You can also increase your chances of winning by filling out the form twice, one on Monday and one on Tuesday. The draw will take place on Tuesday, August 29, at 5:00 p.m.

OTHER PRIZES

Four additional exhibit hall door prizes will be given away by Honda Canada and the CDA Convention! Here is a list of the prizes:

- Honda Scooter
- Honda Outboard
- Honda Generator
- Honda Lawnmower

Two prizes will be drawn on Monday and two on Tuesday. You can fill out a form in the Exhibit Hall on each of these two days. The exact articles for the draw will be exhibited on site for inspection. Please note that sales tax must be paid upon delivery of the prizes. The prizes will be distributed at any one of the five Honda centres across Canada.

Dental Shopping at the CDA Convention

Order your supplies in the Exhibit Hall

To help the CDA Convention become one of the largest in North America ... we need your help!

All we ask is that you save some of your buying for the Convention.
Not only is it wiser to buy at a convention for the following reasons:

- a better choice
- a vaster assortment
- better bargains
- face-to-face communication with your manufacturers, suppliers and service companies

but, in so doing, you will also be contributing to the growth of the CDA convention!

So, pick up your pencil, draw up a list of your present and future needs and ...

... **happy dental shopping!**

PROMENADE / PROMENADE

HALL D'ENTRÉE / TO LOBBY

Entrée / Entrance

CASSE-CROÛTE
SNACK BAR

CASSE-CROÛTE
SNACK BAR

RESTAURANT

Entrée & sortie
Entrance & Exit
Restaurant

ALL BOOTHS 10' x 10'

ASSOCIATION DENTAIRE CANADIENNE CANADIAN DENTAL ASSOCIATION

EXPOSITION / EXHIBIT

28 - 29 AOÛT 1989 / AUGUST 28th - 29th 1989

Vancouver 1989

Exhibitor's List / Liste des exposants

Company Name/ nom de la Compagnie	Booth No./ no de stand	Company Name/ nom de la Compagnie	Booth No./ no de stand	Company Name/ nom de la Compagnie	Booth No./ no de stand	Company Name/ nom de la Compagnie	Booth No./ no de stand				
A											
A-Dec Inc.	723,724	Dentsply Canada Ltd.	403,404,405,406,407,408	Lares Research	1023	Septodont	416				
Allstar Dental Laboratories Ltd.	1121	Designs for Vision Inc.	119	Leeming / Pacquin (Div. Pfizer Cda. Inc.)	713	Sherwood Medical Industries (Canada) Inc.	1020				
Amadent / American Medical and Dental Corp.	708	Dialog Medical Systems Ltd.	1124	M							
American Dental Association	612	Direct Dental Funding Ltd.	1123	MacDonald Travel Corporation ..	707	Shofu Dental Corporation	808				
Aseptico Inc.	924	E		McNeil Consumer Products Company	815	Siemens Electric Ltd.	603,604,605,622,623,624				
Ash Temple Ltd.	209,210,211,212, 213,214,215,216,217,218	Encyclopaedia Britannica	314	MDT Corporation	422	Sinclair Dental Co. Ltd.	903,904,905,906				
Astra Pharma Inc.	1022	Eurodent International of America (Mfg.)	203,204,205,222,223,224	Medi-Dent Corporation	220,221	Smith, Kline & French Ltd.	523				
Aurum Ceramic Dental Laboratories Ltd.	703,704	Executive Dental Supply Ltd.	921,922	Medical Mart Supplies Ltd.	115	Soroka Dental Laboratories Ltd.	818				
B		Exan	105,122	Mercedes Software Ltd.	1019	Star Dental / Den-Tal-Ez Inc.	616				
Beau Photo Supplies Inc. / Polaroid Canada	1016	F		Midwest Dental Products Corporation	919	Sulcbrush Inc.	819				
Belmont Takara Company of Canada Ltd.	1017,1018	Fine Arts Dental Laboratory	419	Miles, Linda L. & Associates	917	Swiss NF. Metals Inc	820				
Benson Medical Industries Inc.	805	First City Trust - Health Services Group	812	Miltex Instrument Co. Inc.	1112	T					
Block Drug Co.	1011	First Impressions Uniforms	611	Mobile Dental Equipment Corp.	614	Teledyne Getz	814				
Brasseler USA Inc.	909,910	G		Modudent / Cox Systems ..	1119,1120	Teledyne Water Pik Canada Ltd.	409,410				
Braun Canada Ltd.	821	G. C. International	208	Mosby, C.V. Co. Ltd.	411	Theta Corporation	1103,1104				
Bredent	1107	Genie Computer Systems Ltd.	912	N							
Britley House (Div. of Rutland Biotech Ltd.)	315	Germiphene Corporation	311	Nephron Corp. - Dental Div.	813	3M Canada Ltd.	1007,1008				
Buffalo / Bolton Dental Mfg. Inc.	719	Gilbert's Dental Supplies Inc.	109	Nobelpharma Canada Inc.	609,610	Toronto Dominion Bank (The) ..	615				
Burroughs Wellcome Inc.	113	H		Northwest Dental Inc.	423	Trans Canada Dental Ltd.	806				
Business and Message Center	103,104,123,124	Hartzell, G. and Son	613	Novocol Pharmaceutical of Canada Inc.	720	Tri Hawk International Inc.	1009				
Butler, J.O. Co.	318	HCC Healthcare Communication Canada Ltd.	920	O							
C		Healthco (Canada) Ltd.	509,510,511,512,513, 514,515,516,517,518	Oral-B Laboratories Inc.	524	Troll Plastics Inc.	823				
Calicher Communication Systems Inc.	714	Hoechst Canada Inc.	317	Orbident International Inc.	413	Turbine Industries	721				
Canada Microsurgical	1117	Horner, Frank W. Inc.	116,117,118	P							
Canadian Dental Association	507,508,519,520	Hu-Friedy Mfg. Co., Inc.	323,324	Pascal Co.	207	Unident Ltd.	1114				
Canadian Dental Supply	505,506	Hygienic Corp.	206	Patient Communications Systems Inc.	1118	Union Broach / A Health-Chem Company	503				
Canadian Practice Consultants ..	621	I		Pfingst & Co.	706	Upjohn Company of Canada (The)	712				
Caulk, The L.D. of Canada	319,320,321	Image Uniform Inc.	114	Philips Medical Systems Canada Ltd.	312	V					
Cerum Dental Supplies Ltd.	424	Inland Dental Distributors Ltd.	923	Premier Dental (Canada) Inc.	619,620	Van R / Cadco / Clive Craig	824				
Cerum Ortho Organizers	803,804	Innomed Christie Group Ltd.	1111	Pro / Card (Div. of Hamer Graphics Inc.)	911	W					
CDSPI	606,607,608	Inter-Dent	106	Procter & Gamble Inc.	1006	Warner Lambert Canada Inc.	n809,810,811				
Charge / Dent	219	Interplak / Bausch & Lomb Oral Care Div.	1012,1013	Prodent International Traders Ltd.	120	Westan Distributors Ltd.	1122				
COE Laboratories / ICI Dental ..	918	Inter-Unitek Canada Ltd.	421	Professional Practice Builders Inc.	308	Western Canadian Dental Systems Ltd.	705				
Colgate Palmolive Canada	816,817	Ishiyaku EuroAmerica Inc.	722	Professional Practice Sales Ltd.	907	Whaledent International	1010				
Coltene	414	Ivoclar-Vivadent Canada Inc.	908	Protec Orthodontic Laboratories Ltd.	112	Whip Mix Corporation	913				
Columbus Dental / Miles Inc.	1024	J		R							
Commercial Lighting Products ..	1021	Jelenko, J. F. & Co.	415	Reddish Stone c/o Pacific Dental Products	822	Whitehall Laboratories Ltd.	316				
Computer Station	1005	Johnson & Johnson Inc. Dental Products	108	Rhone-Poulenc Pharma Inc.	420	White Sister at Woodward	1109				
Core-Vent Corporation	1003,1004	Johnson & Johnson Inc. Oral Health Div.	107	Rocky Mountain Orthodontics Canada Ltd.	110	Williams Dental Co. of Canada ..	504				
Cosmetic Concept Dental Laboratory	807	J. P. Distributors Inc.	1110	Rule Medical and Dental Ltd.	121	Wright Dental Canada Ltd.	914				
D		K		S							
Degussa Canada Ltd.	303,304,305,306,307	Kaycor International Ltd.	1116	Safeguard Business Systems Ltd.	1105,1106	XYZ					
Denco Canada Dentaire	709,710,711,716,717,718	Kerr Canada	309,310	Sci-Can (Div. of Lux Zwingenberger Ltd.)	417,418	Zadall Systems Group Ltd.	313				
Den-Mat Corporation	1108	Kilgore International Inc.	111								
Den-Tal-Ez Inc. / Star Dental ..	617,618	Kodak Canada Inc.	412								
Dental Plus	1015										
Dental Power of B.C.	715										
Dentawest Dental Supply Ltd.	915,916										
Dentech	1113										

Vancouver 1989

How to register for the CDA Convention

Filling out Your Registration Form

1. Register early, some courses have limited attendance.
2. There is only one registration form to be used by all categories of participants.
3. Use one form per person (photocopy for several registrants).
4. Spouses and children should have a separate form for each individual.
5. Total the dollar amount of activities and courses you plan to attend, and make cheque payable to the Canadian Dental Association.
6. If your cheque covers the cost for several registrants, your name or company name should be clearly indicated in the appropriate space on each registration form.
7. Dental assistants and dental hygienists should fill out a separate form for each individual.
8. If hotel accommodation is needed, fill out the hotel reservation form.
9. If travel arrangements are needed, call Air Canada Convention Central for the best rates and services.

Filling out Your Hotel Reservation Form

1. Reserve early. August is a very busy month in Vancouver. We have negotiated for you the best rates possible at many of Vancouver's luxury hotels, but hotel rooms are limited in number.
2. CDA is handling the hotel reservations in house, so you will not be able to reserve directly with the hotel.
3. Use one reservation form per room.
4. Your reservation will be confirmed by the hotel.
5. To guarantee your room for late arrival, you must pay your first night deposit directly to the hotel.
6. Any further changes to reservations should be made through CDA headquarters.

Making your Airline Reservations

Air Canada has been appointed the sole official carrier for the Canadian Dental Association 1989 Annual Convention in Vancouver. Special arrangements have been made with Air Canada to offer convention participants discounts on air fares. To take advantage of this service, you must call Air Canada's Convention Central when booking your tickets (your travel agent can call on your behalf). Dial **1-800-361-7585**. The Convention Central hotlines are open **weekdays, 9:00 a.m. to 5:00 p.m. EST/EDT**. Identify yourself and the CDA convention. Air Canada's convention experts will do the rest. The lowest fare available will be confirmed to you, subject to availability and advance purchase conditions.

Fly Canada's #1 Convention Airline to the 1989 CDA Convention in Vancouver, and SAVE. Through Convention Central, you also have the opportunity to save on car rentals. Ask for details when booking your flight. The Convention Central staff are eager to help in any way.

Not to be overlooked, Air Canada has graciously offered two tickets for any destination it services in North America or Europe as the prize in our advance registration draw. To be eligible for the draw, you must register for the convention before July 17.

1989 CANADIAN DENTAL ASSOCIATION CONVENTION

Vancouver Trade & Convention Centre ■ August 26 - 30, 1989

ADVANCE REGISTRATION FORM

With the new computerized registration system, it is *essential* that each registrant fill out a separate form. Photocopy the form for more than one registration. Advance registrations will be accepted until **July 17, 1989** after which they will be returned to the sender. Each on-site registration will be subject to a \$25.00 administrative fee. Please print.

Surname: _____ First Name: _____ Sex: _____

Address: _____ (Street) _____ (City) _____ (Province)

Telephone: () () () () () () (Residence)

(Postal Code) _____ (Office) _____

CDA Membership or License Number: _____

PRE-CONVENTION - AUGUST 26, 27 ■ Limited Attendance

SATURDAY, AUGUST 26

Dr. Ron Jordan - COMPOSITES - Lecture

Dentist\$ 150.00
Staff\$ 50.00

Dr. Irvin A. Roseman - Endodontics - Hands-on Program

Dentist\$ 175.00

SUNDAY, AUGUST 27

Ms Linda Miles - PRACTICE MANAGEMENT - Lecture

Dentist\$ 150.00
Staff\$ 50.00

Dr. Michael Goldfogel - Composites - Hands-on Program

Dentist\$ 175.00

CONVENTION - AUGUST 28, 29, 30



DENTIST

Member College of Dental Surgeons of British Columbia Nil
Member, CDA/ADA (American/Foreign)\$ 125.00
Non-member, CDA\$ 190.00

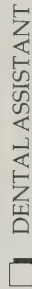
Includes: Scientific sessions, exhibits, Sunday Opening Ceremony



DENTAL HYGIENIST

CDHA/BCDHA Member\$ 60.00
Non-member\$ 90.00

Includes: Scientific sessions, exhibits, Sunday Opening Ceremony



DENTAL ASSISTANT

CDA Member\$ 60.00
Non-member\$ 90.00

Includes: Scientific sessions, exhibits, Sunday Opening Ceremony



TECHNICIAN

.....\$ 60.00

Includes: Scientific sessions, exhibits, Sunday Opening Ceremony



OFFICE PERSONNEL

.....\$ 60.00

Includes: Scientific sessions, exhibits, Sunday Opening Ceremony



STUDENT

☐ Dentist ☐ Hygienist ☐ Dental Assistant Nil

Includes: Scientific sessions, exhibits, Sunday Opening Ceremony



ACCOMPANYING PERSON/SPOUSE

.....\$ 90.00

Includes: Scientific sessions, exhibits, Sunday Opening Ceremony and Spouses' Program including two luncheons.



CHILD

.....\$ 40.00

Includes: Access to convention, Sunday Opening Ceremony and Children's Program including two box lunches and Carnival Night.



SOCIAL EVENTS

Sunday • Opening Ceremony - 5:00 - 7:00 p.m. (Incl. in registration) Nil
Will attend ☐ Yes ☐ No

Sunday • Carnival Night - 7:00 - 11:00 p.m.
(following Opening Ceremony) per person\$ 10.00

Monday • "Black & White" Evening (per person)\$ 40.00

TOTAL\$ _____

The above registration fees are paid by _____

IMPORTANT:

Please make cheque payable to: **Canadian Dental Association**
and mail to: 1989 CDA Convention
c/o Canadian Dental Association

No post-dated cheques, please.
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

Cancellation Policy:

- Cancellations received on or before July 17, 1989 - full refund
- Cancellations after July 17, 1989 - subject to a 25% administrative charge
- No refund after August 10, 1989

Dentists registering by July 17, 1989 will be eligible to win two tickets anywhere Air Canada flies in Europe and North America!

1989 CANADIAN DENTAL ASSOCIATION CONVENTION

August 26 - 30, 1989 ■ Vancouver Trade & Convention Centre

Vancouver, British Columbia



Hotel Reservation Form

Please check appropriate category:

☐ Dentist ☐ Hygienist ☐ Assistant ☐ Exhibitor ☐ Office Personnel ☐ Other (please specify) _____

Name: _____

Address: _____

City: _____ Province: _____ Postal Code: _____

Telephone: () ()
(Res.) (Office)

Type of Room

☐ Single ☐ Double ☐ Twin ☐ Other (please specify) _____

Indicate first three hotel choices (by numbering the boxes):

- | | |
|--|-----------------------------------|
| ☐ Pan Pacific (CDA Headquarters) | \$149.00 single / double |
| ☐ Four Seasons (CDA Headquarters) | \$135.00 single / double |
| ☐ Hyatt Regency | \$135.00 single / double |
| ☐ Hotel Vancouver | \$130.00 single / double |
| ☐ Sheraton Landmark | \$110.00 single / double |
| ☐ Hotel Georgia (CDAA Headquarters) | \$ 99.00 single / double |
| ☐ New World Harbourside | \$ 95.00 single / \$105.00 double |

Arrival Date: _____

Departure Date: _____

Arrival Time: _____

Your reservations will be confirmed to you directly by the hotel. This reservation is guaranteed only **until 6:00 p.m.**
Information for guarantees after 6:00 p.m. will be provided with the confirmation from the hotel.
Any future changes to the reservation should be made through the Canadian Dental Association.

Send Reservation Form to:

CDA Convention
Canadian Dental Association
1815 Alta Vista Drive
Ottawa, Ontario K1G 3Y6

DO NOT send a deposit with this Reservation

DEADLINE for Reservations: July 17, 1989

L'ADC PRÉSENTE LE



NOUVEAU CATALOGUE

Placez votre commande
sans plus attendre!

Téléphonez sans frais

1-800-267-6364 (l'Est du Canada sauf le code régional 709)

1-800-267-6354 (l'Ouest du Canada et le code régional 709)

LA SANTÉ DENTAIRE
UNE RICHESSE
Pour la vie
MD

L'ASSOCIATION DENTAIRE CANADIENNE

Nitrous Oxide

Le protoxyde d'azote

1. Cleaton-Jones, P. and Moyes, D.G. "Nitrous oxide pollution hazards and their prevention in dentistry." *Journal of the Dental Association of South Africa*. Jun. 1987, v. 42, no. 6, pp. 321-4.
2. Gillman, M.A. "Inhalation sedation with isoflurane: an alternative to nitrous oxide sedation in dentistry" [letter] *British Dental Journal*. Apr. 9, 1988, v. 164, no. 7, pp. 204.
3. Hallonsten, A.L. "Sedation by the use of inhalation agents in dental care." *Acta Anaesthesiologica Scandinavica Supplementum* 1988, v. 88, pp. 31-5.
4. Holland, M.R. "Administration of local anesthesia and nitrous oxide analgesia by dental hygienists?" *Northwest Dentistry*. Nov.-Dec. 1987, v. 66, no. 6, pp. 13-4.
5. Kestenberg, S.H. and Young, E.R. "Potential problems associated with occupational exposure to nitrous oxide." *Canadian Dental Association Journal*. Apr. 1988, v. 54, no. 4, pp. 277-86.
6. Leadbeatter, S. "Dental anesthetic death. An unusual autoerotic episode." *American Journal of Forensic Medicine and Pathology*. Mar. 1988, v. 9, no. 1, pp. 60-3.
7. McMenemin, I.M. and Parbrook, G.D. "Comparison of the effects of subanaesthetic concentrations of isoflurane or nitrous oxide in volunteers." *British Journal of Anaesthesia*. Jan. 1988, v. 60, no. 1, pp. 56-63.
8. Nathan, J.E. and others. "The effects of nitrous oxide on anxious young pediatric patients across sequential visits: a double-blind study." *ASDC Journal of Dentistry for Children*. May-Jun. 1988, v. 55, no. 3, pp. 220-30.
9. Nelson, C.L. "Chronic nitrous oxide exposure: occupational hazards in dentistry." *Alumni Bulletin, School of Dentistry, Indiana University*. Spring, 1987, v. 1, no. 3, pp. 9-11.

10. Parbrook, G.D. and others. "Inhalation sedation with isoflurane: an alternative to nitrous oxide sedation in dentistry." *British Dental Journal*. Aug. 8, 1987, v. 163, no. 3, pp. 88-92.

One copy of the above package of articles is available for \$5.00 to all CDA members and for \$10.00 to non-members. (Ontario residents, please include 8% sales tax.)

LIBRARY SERVICES

As a convenience to all CDA members in the various time zones in Canada, it is now possible to call the CDA Library, between 4:30 pm and 8:30 am Ottawa time, in addition to during regular library hours (8:30-4:30 EST).

After hours: (613) 523-5482

Daily: 1-800-267-6354 (Western Canada and area code 709)

1-800-267-6364 (Eastern Canada excluding area code 709)

Envoy: CDN.DENTAL.LIB

FAX: 613-523-7736

Les membres de l'ADC peuvent obtenir pour 5\$ et les non membres pour 10\$ une copie des articles de la bibliographie ci-dessus.

SERVICES DE BIBLIOTHÈQUE

Pour mieux servir les membres de l'ADC habitant dans les différentes zones horaires du Canada, la Bibliothèque de l'ADC dispose maintenant d'un service téléphonique de 16h30 à 8h30, heure d'Ottawa, en plus des heures ordinaires (de 8h30 à 16h30, HNE).

En dehors des heures ordinaires:

(613) 523-5482

Aux heures ordinaires:

1-800-267-6354 (l'Ouest du Canada et la région dont le code est 709)

1-800-267-6364 (l'Est du Canada, sauf la région dont le code est 709)

Programme informatique

Envoy: CDN.DENTAL.LIB

FAX: (613) 523-7736

11. Puttick, N. and Rosen, M. "Propofol induction and maintenance with nitrous oxide in paediatric outpatient dental anaesthesia. A comparison with thiopentone-nitrous oxide-halothane." *Anaesthesia*. Aug. 1988, v. 43, no. 8, pp. 646-9.
12. Rodrigo, M.R. and Rosenquist, J.B. "Isoflurane for conscious sedation." *Anaesthesia*. May 1988, v. 43, no. 5, pp. 369-75.
13. Ryder, W. and Wright, P.A. "Dental sedation. A review." *British Dental Journal*. Sept. 24, 1988, v. 165, no. 6, pp. 207-16.
14. Saunders, J.F. "N2O" *RDH*. Jun. 1988, v. 8, no. 5, pp. 36-9, 41.
15. Saunders, J.F. "Not a laughing matter." *Dental Assistant*. Jan.-Feb. 1988, v. 7, no. 3, pp. 10-14.
16. Saunders, J.F. "Not a laughing matter. Part II." *Dental Assistant*. May-Jun. 1988, v. 7, no. 5, pp. 12-15, 28.
17. Weinstein, P. and others. "Treating dental fears using nitrous oxide oxygen inhalation and systematic desensitization." *General Dentistry*. Jul.-Aug. 1988, v. 36, no. 4, pp. 322-6.
18. White, C.S. and others. "Incidence of oxygen desaturation during oral surgery outpatient procedures." *Journal of Oral and Maxillofacial Surgery*. Feb. 1988, v. 47, no. 2, pp. 147-9.
19. Whitehead, B.G. and others. "Monitoring of sedated pediatric dental patients." *ASDC Journal of Dentistry for Children*. Sept.-Oct. 1988, v. 55, no. 5, pp. 329-33.

Library Acquisitions

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ORAL PATHOLOGY

van der Waal, I. and
van der Kwast, W.A.M.

Quintessence Publishing Co.,
Chicago, 1988, 392 pages
\$120.00 CAN

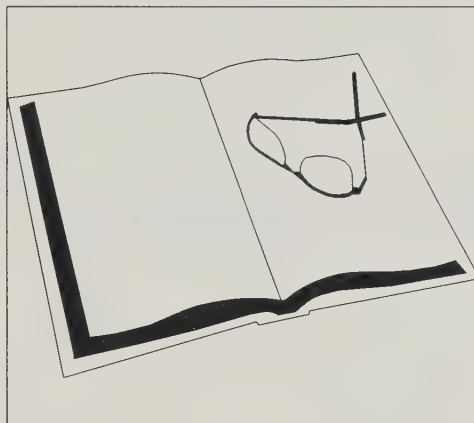
While not evident from its title, this book is a hybrid, combining the visual appeal of an atlas with the formal pedagogical aspirations of a didactic text. I found the concept interesting but at times confusing.

Physically, the book is an aesthetic delight. The text is well spaced and well set on coated, 80 lb. stock. This provides an excellent matrix for the colour clinical photographs and histopathologic illustrations, many of which are the best I have seen in a textbook.

The authors have organized their material into 16 major subject chapters and one differential diagnosis summary chapter. Many of the sections deal with common subjects one expects in standard oral pathology texts such as Odontogenic and Non-odontogenic cysts, Salivary Gland Diseases, Diseases of the Jaws, etc. However, the writers seem to have had a problem with uncommon conditions or those that do not fit into recognized pathological niches. As a result chapter 16 is titled "Some Inflammatory Lesions and Generalized Diseases with Possible Manifestations in the Head and Neck Region", and includes conditions ranging from AIDS through scarlet fever to midline granuloma. Some may find this a bit too eclectic. Each chapter concludes with an extensive and up to date bibliography that is not limited to the European literature, a temptation the authors have largely resisted.

Initially, I was prepared to dislike this text, an impression reinforced after reading the first chapter. In this section, "Benign Lesions of the Oral Mucosa",

conditions are listed alphabetically for ease of reference although not fulfilling the basic tenants of a standard surgical sieve. Further reading of the text revealed a number of minor omissions and structural irregularities. As an example, *cheilitis actinica* is introduced in chapter one but the authors state that this is a pre-malignant lesion to be discussed in chapter two. Non-healing extraction wounds are included in the section on oral ulcers. In the midst of delineating the radiographic features of radicular cysts the authors begin a discussion of the diagnostic features and treatment of periapical



cemental dysplasias before this condition is formally introduced to the reader. Statements such as, "periapical inflammation caused by a cyst", do little to enlighten the reader regarding the pathogenesis of inflammatory odontogenic cysts. In discussing the pathogenesis of dentigerous cysts, degeneration of stellate reticulum in the enamel organ is cited as a possibility. A well written and concise section on AIDS is deficient in its failure to include a clinical photograph of oral Kaposi's Sarcoma.

Van der Waal and van der Kwast occasionally succumb to the pressure of their own extensive literature review and in the section dealing with granular cell tumor discuss the experimental evidence

regarding theories of histogenesis of this lesion. The ultrastructure details of "Z" bands in rhabdomyosarcoma are discussed while the histologic features of inflammatory hyperplasias receive a somewhat superficial treatment. These are interesting bits of information but out of context given the thesis of the book.

The minor inaccuracies and inconsistencies are not serious in and of themselves but create an uneven texture to the authors' message and detract from the book's otherwise excellent qualities. A second and revised edition will correct these irregularities but their presence in this first version may confuse an individual new to the subject.

As mentioned, the text contains many excellent illustrations in colour with radiographs of good quality where appropriate. Despite the graphics being sited as close to the text as possible, frequently the accompanying captions are not well placed. This is especially evident where there are three illustrations with captions grouped asymmetrically such that it is not obvious which caption relates to which figure. In time, one adjusts, but it continued to annoy me throughout the book. Additionally, the instructive potential of many of the book's illustrations could be enhanced with the addition of illustrative markers such as letters or arrows.

A further difficulty I found in reading the text is a certain grammatical style characterized by successions of short, choppy sentences, frequently making up entire chapters. Occasionally the subject will change in mid-section or the writing effect is different between paragraphs. Although certain sections would have been written by one or the other author, there seems to have been little attempt to smooth out the irregular prose. I thought that part of this problem was due to the effects of translation but, as I was informed by the publisher that all drafts

had been constructed in English, I conclude that this unevenness is author specific. In my opinion stronger editorial input would improve the book's readability.

In the preface the authors define their audience as dentists, physicians, students and specialists, a formidable challenge. I would suggest that students approach this text with caution while the book will be an excellent addition to the libraries of general dental and medical practitioners. I applaud the efforts of the authors to include most head and neck disciplines as beneficiaries of this addition to the oral pathology literature, but I cannot recommend it for such specialists.

To summarize, *Oral Pathology* by van der Waal and van der Kwast is a hybrid textbook in an early stage of evolution. With refinement and some stylistic alterations it has the potential to become a significant clinical oral pathology text. Although it is costly, any effort to produce a less expensive version will compromise significantly its visual appeal and instructional value.

This book was reviewed by:
Robert Priddy, DDS, MSc, FRCD(c),
Chairman, Division of Oral Pathology,
Faculty of Dentistry,
University of British Columbia,
Vancouver, B.C.

DENTAL TECHNOLOGY AND MATERIALS FOR STUDENTS

H.J. Wilson
M.A. Mansfield
J.R. Heath
D. Spence

1987, 8th edition
634 pages illustrated

The stated premise of this text is to make the dental undergraduate "aware of the inherent problems of dental technology and thus able to advise their technician." The text is not intended to make the undergraduate an "expert technician."

In general, this text accomplishes its stated premise. It does review the multitude of dental technology procedures which would be required by a dental practitioner. In each situation, brief discussions of the materials to be used and their physical properties are offered in conjunction with the procedures and emphasis is placed upon those areas where problems may develop. Alternate methods are com-

pared and clinical rationales are discussed for selection of appropriate method.

However, the text is not totally without fault. Statements are made or implied, which can be misinterpreted by less experienced readers. For example, when reviewing elastomeric impression materials, the reader may be left with the incorrect understanding that polysulfide elastomers are equivalent in long-term stability to addition reaction polysiloxanes.

Another example of a questionable statement is that average value articulators may be routinely employed in the fabrication of complete removable denture prostheses. It is implied that this is an acceptable method because the underlying denture bearing area is covered by displaceable mucosa and therefore, a more complex articulator is not useful to produce a greater accuracy of the posterior guidance.

The use of inappropriate nomenclature is also observed throughout the text. The terms "gums" and partial denture "saddles" may be of some value in discussions with lay persons, but should be avoided in publications directed at the undergraduate level dental personnel.

The overall length of this publication makes its reading tedious at times.

Although this text does achieve its basic premise of alerting the undergraduate to potential technologic problems, the same material can be found in greater depth in other publications and as such this reviewer sees limited application for its adoption in a dental undergraduate curriculum.

This book was reviewed by:
Robert M. Brygider, DMD
Assistant Professor,
Division of Removable Prosthodontics
Faculty of Dentistry
Dalhousie University

CLINICAL PHARMACOLOGY IN DENTAL PRACTICE

Edited by S.V. Holroyd,
R.L. Wynn and B. Requa-Clark

1988, The C.V. Mosby Company, Toronto
600 pages

The 4th edition of *Clinical Pharmacology in Dental Practice*, edited by S.V. Holroyd, R.L. Wynn and B. Requa-Clark is an expanded version of the 3rd edition

which was published in 1983. The objective of this publication is to bridge the gap between the pharmacology texts and purely clinical articles on therapy.

Certain chapters have been revised to reflect changes in either basic knowledge of mechanism of drug action or changes in clinical therapeutics. There are a total of sixteen contributors in addition to the three editors and the contributors were chosen for their expertise in certain specific areas of pharmacology and/or therapeutics. Noteworthy improvements include the revised chapters on benzodiazepines and sedative-hypnotics, opioid analgesics and adrenocorticosteroids.

The first five chapters of the book constitute Part One — General Pharmacology and are virtually unchanged to any significant degree from the earlier edition. They provide superficial treatment of the principles of drug action, absorption, solubility, distribution, biotransformation, clearance and adverse reactions. The value of these opening chapters is doubtful. They are neither detailed enough to provide a knowledge of how these factors may affect drug action so as to be useful to a student of pharmacology, nor interesting enough to catch the interest of the clinician interested in knowing how to appropriately prescribe drugs to achieve a desired therapeutic effect. The chapter on prescription writing would be better confined to one of the appendices along with the 200 top prescribed drugs. Listing the 200 top prescribed drugs every five years also seems like a waste of time when an *annual* compendium has difficulty staying current.

A good deal more information about why and how dental treatment should be amended in patients with certain common systemic diseases or conditions such as a history of myocardial infarction or angina, uncontrolled hypertension, hyperthyroidism, diabetes mellitus or risk of adrenal insufficiency would have been very welcome. Also a discussion of controversies concerning antibiotics prophylaxis would be appropriate rather than simply reprinting previously published guidelines.

While this edition has some merit I feel it suffers from trying to be both a brief text on pharmacology for students and a condensed therapeutic reference for clinicians and comes up short on both counts.

W.C. Sturtridge, DDS, MD, PhD
Associate Professor of Medicine
Dentistry and Pharmacology
University of Toronto.



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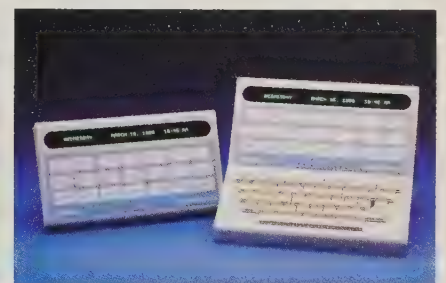
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Guidelines for the control of radiation

Introduction

Since the Federal Government maintains jurisdiction over the standards of construction and functioning of x-ray equipment, while its installation, registration and office design criteria for its use are promulgated by provincial legislatures, any guidelines developed by CDA for the use of x-radiation in the dental office should not deal specifically with legislative areas, but rather set forth standards of practice for dentists which reflect and demand professional competence and judgement.

General Guidelines

1. All x-ray equipment must conform to the Federal requirements of the Radiation Emitting Devices Act.
2. All equipment installation and room design criteria, e.g. with respect to wall insulation, (lead lining or equivalent) must be in conformance with provincial regulations. In the absence of existing provincial regulations in any particular jurisdiction, the dentist should refer to Health & Welfare Canada Safety Code 22, National Council on Radiation Protection & Measurements, Report 35, or the ADA Recommendations on Radiographic Practices, 1981.
3. All operators should possess an adequate knowledge of radiation physics, radiation hazards and be able to produce consistent radiographs of diagnostic quality with a minimum of overall radiation exposure. All operators should be licenced or certified according to a standard recognized by the provincial dental licencing body. Radiation Protection licensure may also have to be achieved through the dental associations.
4. It is highly desirable that a regular inspection program of x-ray equipment (usually 3 years) be carried out on a constant basis. It is recommended that a program of quality assurance be established in all aspects of radiological practice in the dental office on at least an annual basis.
5. It is highly desirable that the operator/owner request a radiological technologist, radiation physicist or similarly qualified person to perform a regular inspection of

the x-ray equipment to assess radiation output and "normalize" the x-ray taking system; that is, ensure that existing exposure and processing conditions are producing radiographs within an acceptable exposure range.

6. An exposure guideline chart should be fixed near the x-ray timer indicating kVp, mA and the exposure time to be used for children, adults and edentulous patients.
7. The dentist should view exposed radiographic film under optimal conditions. A magnifying glass with the variable intensity viewer is desirable. Extraneous light should be minimized.
8. It is highly desirable that dentists enrol in continuing education in the many aspects of diagnostic radiology, physics of radiology and radiation biology.

Protection for Operators

Any female operator who suspects or knows she is pregnant must be assured that for the duration of her pregnancy she will experience minimum radiation exposure.

Operators in Training

1. Students in radiography training programs must work under the supervision of a licensed dentist.
2. Students in radiography training should be 18 years of age. Any student less than 18 must not receive any occupational radiation as spelled out in Safety Code 22, Health and Welfare Canada.
3. Students *must not* be exposed to the primary X-Ray beam.
4. Deliberate exposure of an individual for training purposes *must not* be performed.

General Guidelines for Office Personnel

1. A room must not be used for more than one x-ray procedure simultaneously.
2. Persons not essential to the radiologic procedure must not be in the room during the patient exposure.
3. When the operator has no shielding, i.e. cannot leave the room, he/she should stand between 90° and 135° to the primary beam and 2 meters from the subject being radiographed. There is no requirement, in a dental workload, for the oper-

ator to wear a protective apron.

4. The dental film should be fixed in position using a holding device.
5. If parents or escorts are called to assist, then protective clothing should be worn by those persons.
6. The x-ray housing must not be held by the hand during operation.
7. All dental personnel involved in the taking and processing of radiographs should wear personal dosimeters. If continuous use is not felt necessary, then periodic use is recommended to ensure that the current radiologic practice is exposing personnel to acceptable radiation limits as defined in Safety Code 22.
8. In situations where personnel record any radiation on a regular basis on the dosimeter badge, remedial steps must be taken to correct the situation, as the normal situation for good dental radiology should be nil.

Guidelines to Protect the Patient

The risk to the individual patient from a single dental radiograph is very low. However, the risk to a population is increased by increasing the frequency of radiologic examinations and by increasing the number of persons radiographed. Every effort should be made to minimize the amount of radiation required to diagnose the situation.

1. The prescription of a radiologic examination by a licensed dentist must be based on a clinical examination for the purpose of obtaining information not readily available from other sources.
2. The justification for taking dental radiographs must be determined by a perceived need to obtain specific information which could contribute to diagnosis or prevention rather than utilizing the concept of the routine periodic examination with or without examining the patient.
3. One should determine if any recent radiographs are available and see if those are adequate.

These Guidelines were approved by
CDA's Board of Governors at the
1988 Interim Board meeting.



Advice 'based on 1973 reference'

It was with interest that I read "The Role of Dentistry in Head and Neck Radiation Therapy," in the March issue. The authors provide a thorough and knowledgeable account of the oral complications of radiotherapy. It is unfortunate however that the advice given on the choice of direct restorative materials for treatment of radiation caries, i.e. acid etch-composite resin and silver amalgam, was based on a 1973 reference. Although invaluable in routine aesthetic dentistry, composite resins are largely unsuitable for the treatment of post radiation caries.

The authors discuss the predominant cervical orientation of post-radiation caries and correctly stress the importance of focusing on cervical examination of teeth at periodic recalls post radiation. Composite resin restorations work well only where a complete border of sound enamel exists. They possess no anti-caries properties, no self sealing that is so valued with the silver amalgam restoration and due to their polymerization shrinkage are incapable of providing a sealed surface against dentine or cementum even with today's dentine bonding agents. A preventive material, glass ionomer restorative cement is indicated for these situations. These cements contain large quantities of available fluoride, provide a stable bond to dentine, and can provide restorations with great resistance against recurrent decay. Glass ionomer restorative materials have been available commercially for ten years¹ and they are invaluable for caries control. Kidd² has demonstrated *in vitro* the fluoride halo around glass ionomer cement and Billings³ has demonstrated their clinical efficacy in treatment of root decay.

Thus the two preferred direct restorative materials for operable radiation caries are glass ionomer cements and silver amalgam. It is to be hoped that dentists will understand and recognize that composite resins are not an appropriate choice for the treatment of post radiation cervical decay.

Dorothy McComb

Head
Restorative Department
Faculty of Dentistry
University of Toronto

The JCDA encourages readers' comments on topics of current interest. All letters should be typed, double-spaced and signed. The editor reserves the right to edit for length, interest and good taste. Printed communication does not necessarily reflect the opinion or official policy of the Association.

References

1. Kribbs, P.J. Glass ionomer cement: 10 years of clinical use. *J. Oral Rehabil.* 15:103-115, 1988.
2. Kidd, E.A.H. "Cavity sealing ability of composite and ionomer cement restorations: An assessment *in vitro*," *Br. Dent. J.* 144:139, 1978.
3. Billings *et al.* "Contemporary treatment strategies for root surface dental caries," *Gerodontology* 1:20-27, 1985.

No offshore coverage

In reference to your articles in the December 1988 Journal on Missionary Dentistry your readers may be interested in an experience our dental team encountered last March when we combined a holiday with a Dental Mission Project in Costa Rica.

Unfortunately all our dental equipment was stolen and what was initially a major annoyance became rather traumatic when I returned to Canada and applied for office contents insurance. I found that my CDA Plan will cover for Canada and the continental USA but not Latin America or any location off shore. This information is not available on any of the brochures from CDSPI.

My purpose in writing is to warn anyone going to a third world country to take only what you can afford to lose and to understand that CDSPI insurance does not supply coverage.

Dale A. Rustebakke, DMD,
High River, Alberta

Federal duty and sales tax

The dental goods (duty and federal sales tax) information is great — JCDA, Vol. 54: p. 560, 1988. — Is an expanded list available? It would help me when buying dental products.

Larry Talarico, DMD,
Victoria, B.C.

Editor's note: Currently an expanded list is not available. The CDA Taxation Committee suggests contacting Customs and Excise directly for particular information.

Journal advertisement in 'poor taste'?

Outlined below is a letter which I have submitted to Crest, regarding an advertisement appearing in the *Journal of the CDA*. I find this ad. to be in poor taste.

Sir:

This letter is in reference to your advertisement about "Sparkle Crest for Kids" which is appearing in the CDA Journal.

Several dentists, including myself, have found this ad. to be in poor taste. The ad. contains a picture of five "punk" youngsters with the notation that "Sparkle Crest Reforms Delinquent Brushers." In fact, the two young girls are portrayed in rather brief, suggestive outfits.

Such advertising is not necessary to "sell" your well known product. No doubt you, your advertising agency and the CDA Journal, probably find this ad. to be "cute" — but not so to many dentists. In fact our Journal should not permit such negative advertising.

M. Gordon, DDS,
Vancouver, B.C.

Thanks for support

On behalf of the Multiple Sclerosis Society of Canada, I would like to extend our sincere appreciation for the placement of our Carnation Campaign ad in the February 1989 issue of the Canadian Dental Association Journal.

We are indeed grateful for your support in making the public aware of multiple sclerosis, the most common neurological disease of young adults in Canada.

Jackie Munroe,
National Public Education Coordinator,
Multiple Sclerosis Society of Canada,
National Office
Toronto, Ont.

Confused about infection control?

We can help

The amount of information generated today about infection control is overwhelming. To clarify the confusion, ignore the claims and focus on the facts.

FACT: The CDA and CDC have both stated that all heat stable dental instruments should be routinely sterilized between use by autoclave, dry heat or chemical vapor.

FACT: There are many surfaces and instruments in a dental operatory which cannot undergo sterilization. A high-to-intermediate level disinfectant is therefore required. For complete disinfection, you want a tuberculocidal, broad spectrum kill, an EPA and ADA acceptable product, non-corrosive to instruments and as non-toxic as possible.

FACT: Pathex, a potent disinfectant from the Block Drug Company, is a broad spectrum, dual synthetic phenol which is bactericidal, virucidal, fungicidal, pseudomonacidal, and tuberculocidal in just 10 minutes.

FACT: Pathex is intended for use as a surface disinfectant (a unique non-aerosol sprayer bottle is available for this purpose); a holding solution (a special detergent formula starts cleaning action chairside); and for immersion disinfection of semi-critical instruments.

FACT: The combination phenol formulas based on o-phenylphenol (9%) and o-benzyl-p-chlorophenol (1%), when compared with glutaraldehydes, are less corrosive to metal instruments, will not yellow skin or release irritant fumes or odor, and are less toxic.¹

FACT: Pathex is biodegradable.

When all the "noise" is eliminated, so is the confusion. The choice is clear — Pathex for your disinfection needs.

¹ American Dental Association Council on Dental Therapeutics. Acceptance of (synthetic phenol) disinfectant for instruments and equipment. JADA 110 394, 1985



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Money Management

If you followed our article in the May issue, you have now determined:

- your net worth position;
- the amount of your discretionary cash flow available for investments;
- what your future financial requirements might be.

The next step is Asset Allocation.

Asset Allocation

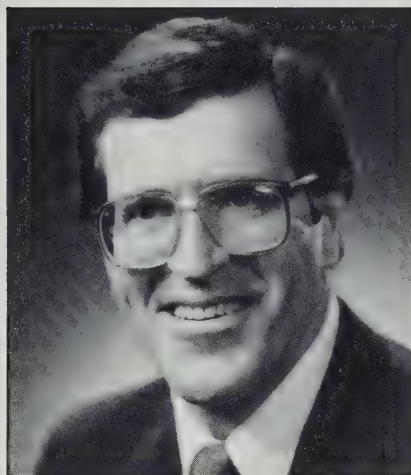
Asset allocation is a very important financial planning concept. It is an analysis of the assets we consider "investment assets"; it does not include your residence, personal assets, or your practice. Its purpose is to diversify your investments, spread your risk, and ensure that some of the more tax-attractive investments are being used.

First, break down your investment assets into the following categories:

- Cash & Deposits — liquid holdings, such as cash in banks, T-Bills, GICs, etc.
- Stocks — common and preferred stocks, equity mutual funds, etc.
- Bonds & Mortgages — government or corporate bonds, debentures, mortgages held, etc.
- Real Estate — real estate, real estate mutual funds, rental property, MURBs, etc.
- Collectibles & Metals — collections which can be sold for a significant value, precious metals, etc.

Total all these investment assets, and then determine what percentage of this total you have in each category. For example, what is the percentage of stocks to total investment assets? If you're 55 years old, and the percentage is 80 per cent, generally speaking, it's too high; this approach is too aggressive. You have too much risk in the market, and less time to recover from a loss than someone who is 40 year old.

At the other end of the risk scale, if you're 45 years old and all your invest-



Robert M. Paterson, CA, MBA, RFP
Vancouver, B.C.

ment assets are income producers such as GICs, T-Bills, and Bonds, after you pay taxes and factor in 5 per cent for inflation, what are you left with? By being overly conservative, inflation and taxes will slowly but surely erode your purchasing power.

The following table illustrates percentages for three age brackets; under 40, 40-55, and over 55. Of course, there are many variations in between, it's just a matter of determining where you stand. What is your tolerance to risk? How conservative are you? Do you have to tone down your investment aggression because you've just moved into the over 55 bracket?

Investment Assets	Under 40	Age 40-55	Over 55
Cash/Deposits	5%	10%	15%
Stocks	35%	30%	25%
Bonds/Mortgages	10%	15%	25%
Real Estate	50%	40%	30%
Collectibles/Metals	—	5%	5%
	100%	100%	100%

By determining where you stand in the conservative-aggressive line, you can start restructuring your assets to reflect a more appropriate balance for your investment portfolio.

Registered Plans

The principle of asset allocation is equally appropriate for your retirement funds, so you should follow the same procedure with your RRSPs. Determine what percentage of your total registered holdings you have in following categories — Cash/Deposits, Equities, Balanced Mutual Funds, Bonds/Mortgages. The key to the success of your RRSPs is to balance the total holdings between the four categories, but keep in mind that your RRSPs are your retirement nest egg and should therefore have a long-range, conservative investment strategy.

... and then the budget came along! There's nothing we can do to change the government's financial plan, so let's give the budget a positive slant and use it as an opportunity to re-evaluate problem situations in our own financial affairs.

1989 Budget Highlights for Individuals

Annual Interest Accrual

Until now, you could report accrued income on compound-interest investments every three years, effectively deferring the task on the first and second year's interest until the third year. The budget states that for any such investment acquired after 1989, the income must be reported each year.

Family Allowances and Old Age Security Pensions Recovery

Over the next three years, the budget will take back family allowance (FA) or OAS paid if your total earnings are over \$50,000. The total repayable will be the lesser of:

- the total FA and OAS included in income;
- 15 per cent of net income over \$50,000.

For 1989, one-third of the above calculation must be repaid; for 1990, two-thirds, and for 1991, the full amount.

This taxing back of government benefits could be a trend in government

policy. Perhaps the next item taxed in this way will be the Canada Pension Plan benefits we had hoped to use during our retirement.

Retirement Savings

Tax assistance for retirement savings has been postponed again. For 1989 and 1990, the limits remain the same as last year, i.e.:

- \$7,500 or 20 per cent of income;
- \$3,500 or 20 per cent of income for Registered Pension Plan or Deferred Profit Sharing Plan members.

Surtax Increase

Effective July 1st, the basic surtax increases from 3 per cent to 5 per cent — so we'll be paying an extra 1 per cent for 1989. Also effective July 1st is an additional 3 per cent surtax on basic federal tax in excess of \$15,000, an extra 1.5 per cent for 1989. Next year, of

course, the 5 per cent basic and 3 per cent additional surtaxes will apply for the whole year.

New Tax Rates

The budget has produced the following new top marginal income tax rates. We've used the Ontario provincial figures, so actual rates will vary slightly depending on your province of residence.

Type of Income	1989	1990
Ordinary and interest	47.2%	47.9%
Dividend	31.9%	32.4%
Capital Gains	31.5%	35.9%

Sales Tax

A Goods and Services Tax (GST) will be selectively applied to most goods and services. Some of the items not included are food, prescription drugs, medical devices, residential rents, most health and dental services (thanks to Bob Hicks), daycare,

legal aid, most educational services, financial services such as loans, mortgages, and life insurance. This will be dealt with more fully as the legislation is developed.

What can we do?

There's not much we can do to circumvent any of these changes. The new budget hasn't inflicted too much damage this year, it's just that Ottawa, each year, slowly chips away and chips away. . . Δ

Robert Paterson is a Chartered Accountant with an MBA from Simon Fraser University. A Registered Financial Planner, he specializes in financial planning for professionals and senior executives.

Susan Dixon, co-author of this article, is a Member of the Canadian Association of Financial Planners and has been with the Paterson & Associates firm for two years. She has designed extensive financial planning computer models.

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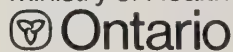
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or telephone collect, (416) 963-1176

This advertisement is directed to Canadian citizens and permanent residents of Canada.

Practice Prosperity 1989

Claudia Anderson, RDH

Part Six:

Personal Visions of Prosperity

The reality of competition and decreasing markets has impacted dentistry and our reaction has been one of fear. In analyzing this response we note that the symptoms are as complex as the people experiencing the change. As skillful practitioners, we have sought to understand and to treat this reaction but the invasion of our secure world is becoming more intense. Emotional, physical and behavioural reactions to unmet expectations are escalating.

Perhaps it's time to change our expectations. How futile has it become to ride the horse in a direction that it is not going?

"The Old Papa"

There is an "old papa" of dentistry. He is a professional first and he exists within us and our organizations. He told us many stories that were true for him. He believed that being prosperous was a matter of working hard and providing our best to patients. As a result, our lives would be predictably successful. The "old papa" is still alive and counselling many of the young people who come into dentistry today. They graduate from fourth year with papa's expectations of wealth and the good life firmly in their hearts. And, not enough business skills to make it happen.

We have loved our "papa" dearly because he speaks for the majority of dentists who are now in their 40's and 50's and still doing well. So why upset the old man, you ask? He hasn't got much longer. Leave him in peace.

"The New Papa"

The new papa is a businessman. He's hard nosed, internally aggressive and suspicious. He "hatched" out of our fear



of losing control and runs a tight ship. He tells us prosperity is a result of solid business principles, budgets, projections, analyses and market shares. He constantly compares us with others. He is unrelenting in his push to have us increase practice gross and lower operating expenses. He applauds the team marketing effort and admonishes us to do as much as we can while we can. He's sharpened us all up. He's caused some of us to lose heart but he's got the "controls" we need, so we listen.

My contention is that the "new papa" and the "old papa" don't like each other very much and that since they exist simultaneously within us, it is we that must referee this conflict of values. At some point we need to clarify our own values especially when we look at changing our practice style for financial or personal reasons.

The Change Process

Change is a process, not an event, made by individuals first, then organizations. It is a highly personal experience and requires time. It entails developmental growth in feelings and skills that empower professionals to understand the conflict within and to make the choices that enhance professional and personal well-being.

Each one of us will internalize this process differently because of our background, needs and attitudes. In order to understand what is going on within ourselves as we process change, it might help to think of a tooth. On the outside is the solid structure of dentin or self perception upon which we function. On the inside is the cementum or values through which we transmit and communicate our expectations. Deep within the tooth, like the human being, is our feeling level or pulp. Often, like teeth, people will not show signs of internal problems until the "feeling level" has been affected. At that point, all manner of symptoms can be manifested and the pain of not doing anything becomes greater than the pain of doing something. At this point most people begin to process change.

In Rosabeth Kanter's new book "When Giants Learn to Dance", we read that these changes in people and their organizations have major social as well as economic consequences — both positive and negative. If there are no easy answers, the task of managing change becomes a matter of balancing between the old and new like perching on a pendulum that is swinging back and forth faster and faster.

I like to believe that sustaining prosperity in dentistry will look more like a skillful reshuffle of the organizational deck in order to deal a better hand. The cards to be dealt are those of **self-awareness, values clarification, innovation, leadership, collaboration and refocusing.** Δ

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The mechanisms of nitrous oxide scavenging devices

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ABSTRACT

A recent publication discussing the concern with nitrous oxide pollution in dental offices and the methods available to reduce this risk¹ aroused interest in scavenging systems. This is the first in a series of three articles and will explain the mechanisms of the nitrous oxide systems available. The second describes the testing of these systems under ideal conditions and the third will assess their efficiency in various dental offices and the factors which were found to detract from that efficiency.

Introduction

Over 30,000 dentists in the United States of America and over 3,000 dentists in Canada use nitrous oxide in their dental offices.² However, the number of people chronically exposed to trace concentrations of anesthetic gases in the dental office is tripled when chairside assistants, auxiliary, receptionists and laboratory technicians are included. Where return-air ventilation systems are used in buildings, a large number of non-dental personnel may also be exposed to low levels of nitrous oxide emanating from a single dental office.

Current evidence suggests that the wives of exposed dentists may also be affected.² As described in a recent article in this journal,¹ it was only in the late 1960's that concern was expressed regarding chronic exposure to anaesthetic gas.³ At that time a report from Russia attributed anesthesiologists with a high incidence of spontaneous abortion and abnormal pregnancies. A series of epidemiological and toxicological studies followed, verifying and expanding these findings.⁴⁻⁸ The observation that nitrous oxide inhibited cell growth in human marrow raised the possibility of it having harmful effects on cell proliferation. Most animal studies have, therefore, been directed towards the gas's effect on embryonic tissue. This has resulted in conflicting reports over the past 15 years regarding the teratogenicity of nitrous oxide. Increased fetal mortality was found in both chicken and rats, by some^{9,10} but not by others.¹¹⁻¹³ Retardation of growth in the chick embryo has also been suggested,^{14,15} while continued decrease in weight in the postnatal rat has been described following prenatal exposure to nitrous oxide.¹⁶ Experiments with prenatal exposure to nitrous oxide in rats, chicks and hamsters have also revealed no malformation in some studies¹⁰⁻¹⁴ but rib defects, hydronephrosis, cardiomegaly and hydrocephaly of the rat in others.^{17,18} The main reason for the differences can probably be

attributed to the different experimental designs, including both the time of exposure and percentage of nitrous oxide used. Experiments in our own laboratories using the hamster model found teratogenesis only at levels of nitrous oxide which would be hypoxic to humans.¹⁹

Of particular interest to dental personnel was the report in 1975 by Cohen,²⁰ following a survey of dentists using nitrous oxide which led to a more extensive investigation by an Ad Hoc committee of the American Dental Association in 1980.² These reports suggested an increase in liver, kidney and neurological diseases among dentists using nitrous oxide and, moreover, increased spontaneous abortions in their wives. The female assistants showed similar disease results and included an increase in cancer rates.

Based on the above information the American Dental Association Council of Dental Materials, Instruments and Equipment recommended that nitrous oxide levels be kept below 50 parts per million (p.p.m.). This paper is designed to describe the mechanisms of the more commonly advertised scavenging devices available.

Methods and Materials

The four systems to be described were provided by the manufacturers along with

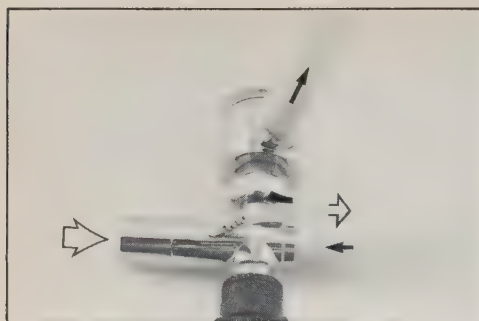


Fig. 2. The direction of gas flow and vacuum flow in the Dupaco System.



Fig. 3. Nosepiece of the Brown mask, indicating flow of fresh gases (outlined arrows) and vacuumed expired gases (solid black arrows).

the relevant information which any dentist would receive. These systems were then given to 10 dentists who were asked to install them, use them for a six-week period, and to give their clinical opinion regarding both the installation and suitability to their practice. No measurements of nitrous oxide levels were made at this time as this was felt to be an additional infringement on the dentists' working area. After each dentist had used each of the scavenging masks for their allotted time they were interviewed and their comments noted. Where a consensus of opinion was present on the various aspects of the systems, this was incorporated in this report.

The systems advertised at the time of writing this article were Dupaco (or Allen), the Brown, the Porter, the Fraser Harlake (now Ohmeda) and the Blue Mask. The Blue Mask, although initially publicized in the literature fairly extensively, has apparently been unavailable in recent years and was, therefore, dropped from the study.

The Dupaco (Allen) System

In this system, gases entered the nose through a single small calibre tubing and were removed by two large calibre tubes, one on either side of the nosepiece (Fig. 1). If preferred, the two large bore tubes can be replaced by a single bore

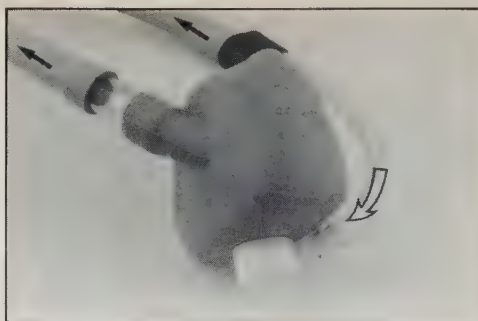


Fig. 1. Nosepiece and gas flow of the Dupaco System (with fresh gas in outlined arrows and vacuum system in solid arrows).

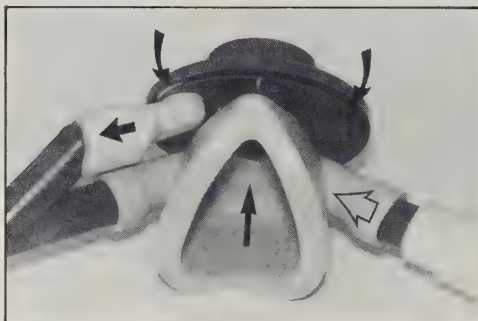


Fig. 4. Nosepiece of the Fraser Harlake (Ohmeda) System, indicating flow of gases and vacuum.

tube exiting from the nosepiece which then passes over the patient's forehead. The flow of gases and the essential part of this system is situated at the manifold exit (Fig. 2). It should be noted that, unlike all other systems, the reservoir bag is on the distal side of the system and, in fact, contains expired gases rather than fresh gas. (Diagram 1). The principle in this system is that between inhalations fresh gas will enter from the small calibre tubing, fill the mask and the large bore tubing and then be available at inhalation. The large bore tubing acts as a reservoir bag does in the conventional systems. The reservoir bag, while filled with expired gases, still allows the monitoring of the patient's rate and depth of respiration.

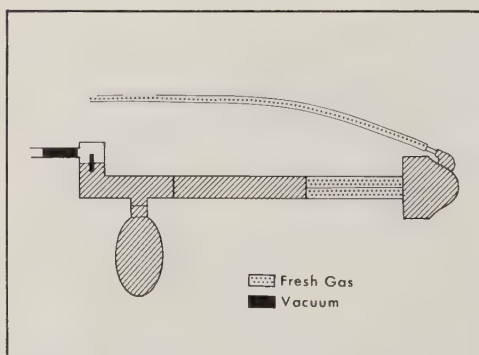


Diagram 1. Schematic of the Dupaco System.

The gases are removed passively to the exterior through corrugated tubing with no "sweeper" device to remove nitrous oxide from around the nosepiece.

Practical Assessment

There is little advertising of this system and, therefore, there was some difficulty in obtaining the equipment. Some adaptation to existing nitrous oxide machines was necessary to fit the apparatus to the different manifolds, although the appropriate fittings were available on request. The mechanism of this system also appeared complicated initially since the direction of gas flow is opposite to that of the others. Once this system is installed however, the nosepiece was found to be quite unobtrusive and did not interfere with the working area. The nosepiece was both well-fitting and made of a sufficiently soft rubber that no discomfort was experienced by the patient.

The Brown Mask

The nosepiece in this system consists of an inner mask with a larger mask which envelopes it. Fresh gases are admitted to the inner mask via two larger diameter tubing (Fig. 3, Diagram 2). Excess and exhaled gases then pass through a one-way valve to the outer mask. The two tubings leading from this outer mask are attached to the suction system in the operatory. The power of the suction is recorded by a gas flow meter provided with this system and can be controlled by an adjustable valve. Any gases escaping from the inner mask around the nosepiece are also scavenged by the suction from the outer mask which is open at the periphery. The fit of the nosepiece is therefore less critical in this system and in fact some operators prefer to use a "loose mask" technique with this system. Yet others have modified the mask by attaching a neck strap at the side of the nosepiece that passes around the patient's head, thus holding the mask firmly around the nose.

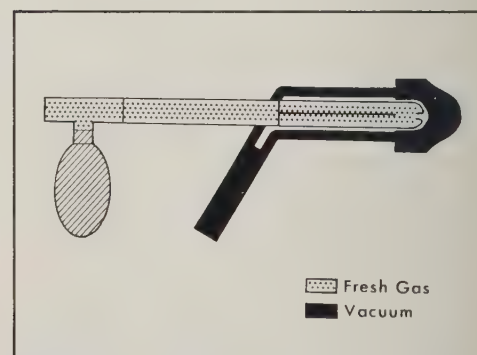


Diagram 2. Schematic of the Brown System.

Clinical Assessment

This system is well advertised and easily available. It requires little experience for installation. The provision of a manometer to assist in controlling the suction ensures that gases are not wasted by having too much suction nor is there excessive leakage around the nosepiece because of insufficient suction. Here again the soft rubber material utilized in the construction of the nosepiece ensures patient comfort.

Fraser Harlake (Ohmeda) System

In this system, fresh gas is provided to the nosepiece via a large corrugated tube (Fig. 4, Diagram 3). Excess gases and expired gases pass through a one-way valve into an umbrella-shaped structure which sits on top of the nosepiece. These waste gases are then moved by suction to the main vacuum system of the operating room. In addition, the umbrella-like structure is open at the periphery and thus acts as a sweeper system which collects any gases escaping from the periphery of the nosepiece. Unlike the Brown Mask, this system is not provided with a flow meter and vacuum control for the level of suction within the system. However, the connector which extends from the waste gas side of the system is so designed and set by the factory that it adjusts normal vacuum flow rates to an optimal, suction level of 3-8 inches of mercury.

Clinical Evaluation

This system is extremely simple to assemble and even the vacuum flow rate does not have to be adjusted. Although the nosepiece with the superimposed sweeper structure looks cumbersome in practice, it did not impinge upon the working area any more so than the standard nasal inhaler. From the patient's point of view the nosepiece felt comfortable.

The main complaint regarding this system was the noise that is emitted from the

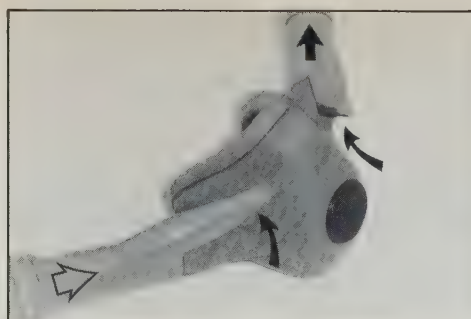


Fig. 5. Nosepiece of the Porter System, indicating the gas and vacuum flow.

nosepiece during operation. The noise is apparently caused by the passage of air into the periphery of the scavenging cone. The higher the vacuum pressure, the higher the frequency of the noise. Some practising dentists turned down their vacuum until the noise is eliminated, which probably eliminated much of the vacuum effect of the scavenging device.

The Porter System

This was probably the most complicated of the systems tested. Basically there are two large bore corrugated tubings attached to the nosepiece (Fig. 5, Diagram 4), one bringing gas to the nosepiece and one taking expired and excess gases from the nosepiece. In this case however the gases are led to a suction device which only operates through the exiting large bore tubing when the patient exhales. In addition, there are two sweeper flanges, one on either side of the nosepiece. These are attached to two smaller tubes through which suction continuously passes and which are embedded within the larger corrugated tubing. The small tubing which passes down the intake corrugated tubing eventually crosses over to join its partner in the corrugated tubing through which exhaled gases are passing. In contrast to the larger corrugated tubing, there is continuous suction passing through the small

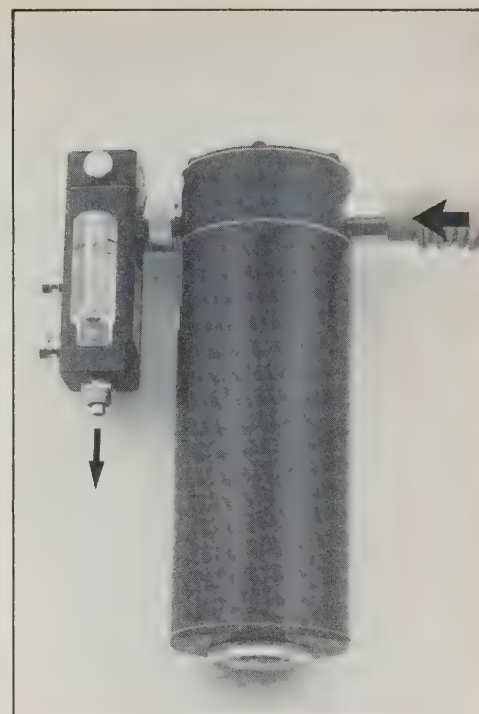


Fig. 6. The vacuum control for the Porter System.

bore tubes. The mechanism for these two vacuum systems is controlled by a black cylinder (Fig. 6) which encases a diaphragm valve. A flow meter and a suction control valve are attached to this cylinder and the optimal force of suction can thus be controlled.

Clinical Evaluation

One problem encountered with this system was the positioning of the black cylinder containing the vacuum mechanism. In the case of portable nitrous oxide machines, a bracket is provided to attach the system to the supporting stand. However, in cases where the head of the machine is incorporated into the cabinetry of the dental office, positioning of this cylinder proved to be awkward.

The mechanism of this apparatus may appear complicated. The intermittent vacuum which occurs only when the patient expires ensures that maximum evacuation is present at the time when most required. The continuous suction through the sweeper flanges is designed to ensure that any gas escaping around the periphery of the nosepiece is removed at all times. This nosepiece seems to be the most cumbersome but it does not limit the operating field to any great extent.

The nosepiece is unique in that the periphery contains adaptable wire surrounded by a soft rubber cushion. This allows the nosepiece to be moulded to the patient's nose and therefore ensures a reasonable fit for all patients.

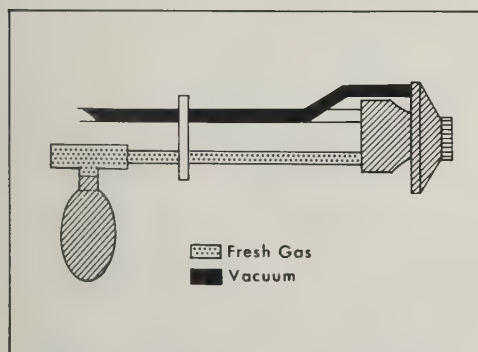


Diagram 3. Schematic of the Fraser Harlake (Ohmeda) System.

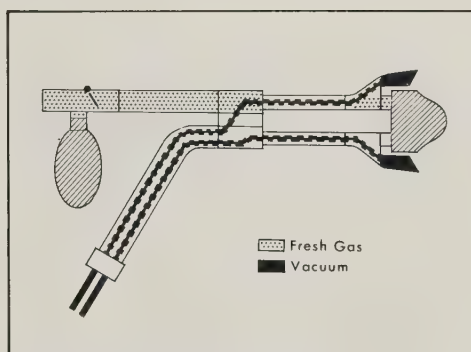


Diagram 4. Schematic of the Porter System.

Discussion

Although many dentists still believe that the trace levels of nitrous oxide in the dental offices are harmless, there is sufficient evidence, both from epidemiological studies and from basic animal research, to suggest the concern is warranted.

The length of time of exposure is a known factor since the evidence from the work of Cohen et al² demonstrates that the longer dentists and their assistants are exposed to these trace levels, the higher the instance of morbidity. There is, however, no indication as to what level nitrous oxide begins to be injurious. The level of 50 ppm is quite arbitrary and it was chosen because such a level could be reached with the scavenging devices available at that time. Safety levels could indeed be much higher or much lower than this. Nor is there any true indication of a safe time of exposure to various levels of nitrous oxide. Despite this lack of firm parameters, since scavenging devices are available on the market at relatively little cost, it would be improper for a dentist not to utilize them. The only question that remains is which of those on the market should one purchase.

At this initial-stage investigation, there was no outright preference for any one mask when clinical convenience was being assessed. When assembly was being assessed, however, the Brown Mask and the Fraser Harlake system were each assessed to be the easiest to install. The Allen system in several cases required minor adaptations to the manifold of the nitrous oxide machine, while the Porter system presented problems with the siting and fixation of the vacuum cylinder. Further papers will describe how effective each of these systems can

be in dental offices situation and which factors are responsible for causing increased levels of nitrous oxide.

Conclusion

Four nitrous oxide scavenging systems were investigated, the mechanisms of each are discussed and the assessment of 10 dentists exposed to their use is offered in the areas of ease of installation and clinical compatibility. Δ

Acknowledgment

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Reprint requests to Dr. Donaldson.

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A comparison of the effectiveness of nitrous oxide scavenging devices

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ABSTRACT

Four nitrous oxide scavenging systems were tested for their efficiency under ideal standardized conditions. The volunteers received 35% nitrous oxide for 20 minutes and the levels of nitrous oxide recorded and averaged every five minutes. No density was carried out. All four systems achieved levels below 30 parts per million.

With the recommended limit for nitrous oxide levels in dental operatory being 50 parts per million (ppm) rather than the several thousand ppm reached without scavenging, it is necessary to ensure that the scavenging devices available are capable of achieving this level. To do so under normal dental operating conditions provides many variables, such as the type of procedure carried out, movement by the patient, ventilation efficiency of the operatory, type of mouth pack utilized etc. This investigation was therefore designed to eliminate all operator and procedure variabilities. Each system was evaluated under ideal identical conditions and with no actual treatment being carried out.

Methods and Materials

A windowless, ventilated operatory of 120 square feet in area and 10 feet in height was utilized. The entrance door was closed off, and no movement allowed within the room during recordings to prevent any variation in room air flow.

Volunteers were placed in the semi-supine position and the nosepiece placed in position, adjusted for both fit and comfort. Using a Dupaco Model 78 machine, which had been previously checked for leakage, oxygen was administered for two minutes, during which time the flow rate was adjusted to meet the patient's tidal flow requirements. This was continually monitored and adjusted as required. From this point on, the volunteer was not allowed to speak or open his mouth.

Thirty-five per cent nitrous oxide was then administered for a half hour and on completion, 100 per cent oxygen was again administered for two minutes.

Nitrous oxide levels were recorded utilizing a "Miran 103" nitrous oxide infra red analyzer which was calibrated before each session with a nitrous oxide filter. The nitrous oxide levels were not only recorded on a strip chart but an averaging device allowed the average level of each time period to be assessed, thus overcoming any fluctuations which occurred over that time. Average readings were taken two minutes after initiating the oxygen, two minutes after initiating the nitrous oxide and then every five minutes for the following half hour.

The nitrous oxide sensor was placed at a position approximating that of the dentist, i.e. at the 10 o'clock position some 18 inches above the patient's head. Care was taken to ensure that none of the investigators breathed close to the sensor, thus avoiding erroneous reading by water vapour.

Four scavenging systems were investigated — The Dupaco (or Allen), the

Brown, the Fraser Harlake (now Ohmeda) and the Porter. Six volunteers were involved in the study with each utilizing the four systems in rotation.

Results

Dupaco (Fig. 1)

The average levels reached were below 5 p.p.m. with small standard deviations. A plateau was reached after some 15 minutes and was maintained until the end of the 30 minutes, suggesting that there would probably be no further increases.

Brown (Fig. 2)

This system reached a steady state after five minutes and again gave very low readings in this ideal situation. The standard deviations, however, were greater than that for the Dupaco system.

Fraser Harlake (Fig. 3)

Since the initial results achieved with this system (Study 1, Fig. 3) were somewhat higher than that obtained in another study sponsored by the company, it was decided to review the differences in our experimental design. The most obvious difference was the type of nitrous oxide machine used: a Dupaco 78 in this study and a Fraser Harlake in the company's study. We therefore repeated the study utilizing a Fraser Harlake machine and indeed the recordings did drop significantly to almost half the initial levels (Study II, Fig. 3). Both studies demonstrated a plateau level within 15 minutes.

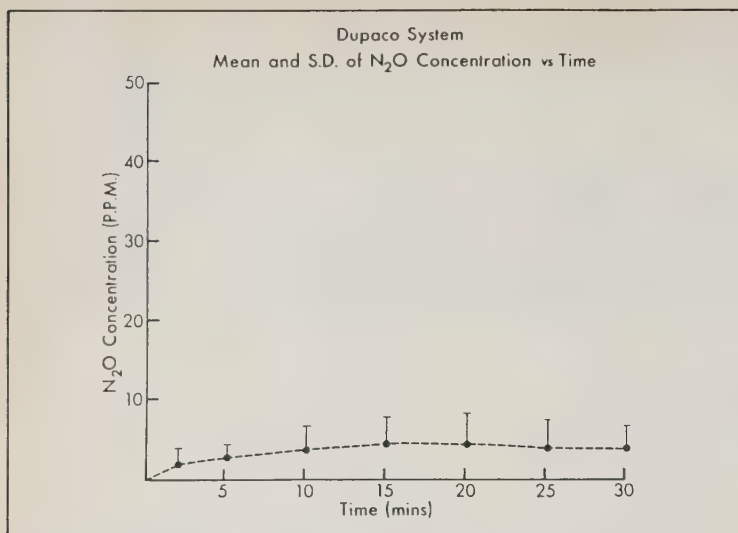


Fig. 1. Dupaco System: Mean and S.D. of N_2O concentration vs. time.

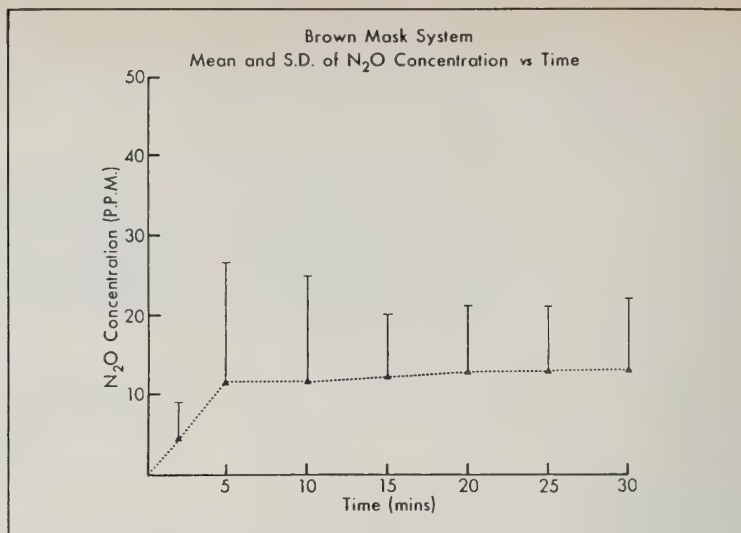


Fig. 2. Brown Mask System: Mean and S.D. of N_2O concentration vs. time.

Porter (Fig. 4)

The initial series demonstrated much higher levels than any other system (Study I, Fig. 4, note the change in scale of p.p.m.). Again the Dupaco machine was substituted by a matching Porter machine and the series repeated.

Although there was then a dramatic drop in levels (Study II, Fig. 4), they were still higher than any other system. At the request of the Porter Company, we dismantled the hoses of the scavenging system to ensure that there was no kinking of the inner hose and again repeated the series. Lower levels were again achieved and while well below the required 50 p.p.m., they were still greater than the other systems.

Discussion

There have been several studies carried out which have measured nitrous oxide levels in operating rooms^{1,2} and dental

offices,³⁻⁶ both with scavenging devices and without. Although interesting in themselves, such studies are fraught with variables, such as the ventilation in the room, the type of procedure carried out, the duration of the procedures and the methods of sampling. A comparison of the efficiency of some sampling techniques was carried out by Austin, et al.,⁷ while criteria for such measurements were established by Robinson, et al.⁸ More recently, Whitcher⁹ also reviewed the validity of measurements of nitrous oxide levels by various means and concluded that time weighted sampling, as used in this study, was the most appropriate.

By time weighting the samples every five minutes, the pattern of the increase in nitrous oxide levels could be monitored. Once a plateau was established on the graph it could be concluded that this would be the approximate level that would be maintained. Fortunately with

the four systems tested, the plateau was reached within the half hour that the nitrous oxide was being applied.

Figure 5 demonstrates that all the scavenging devices tested were capable of reducing nitrous oxide levels below the 50 p.p.m. but it must be stressed that this was under ideal conditions. All systems were easily installed in the dental operatory which required little alteration to the ventilation or suction systems. Several sizes of masks were used in the investigation, utilizing the one which most approximated the individual's anatomy. The Brown mask appeared to be the most forgiving in this respect, as even when a mask was fitted purposely loose, the peripheral suction system accommodated. The Dupaco mask generally fitted well, which appeared to compensate for the lack of any sweeper mechanism. The Porter has an adjustable rim fitted to the mask which is important, since the two sweeper valves point away from the

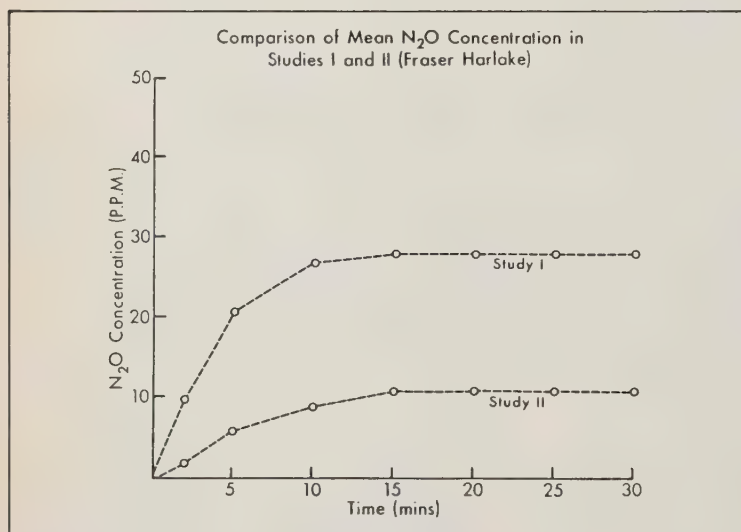


Fig. 3. Comparison of mean N_2O concentrations in studies I and II (Fraser Harlake).

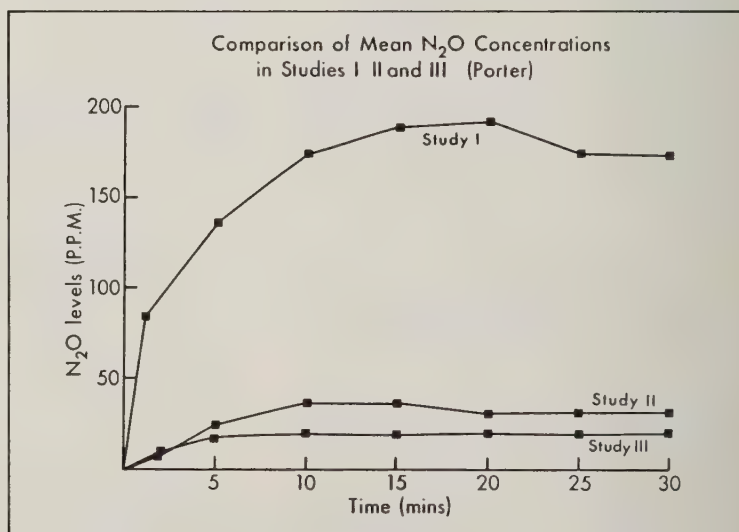


Fig. 4. Comparison of mean N_2O concentrations in studies I, II and III (Porter).

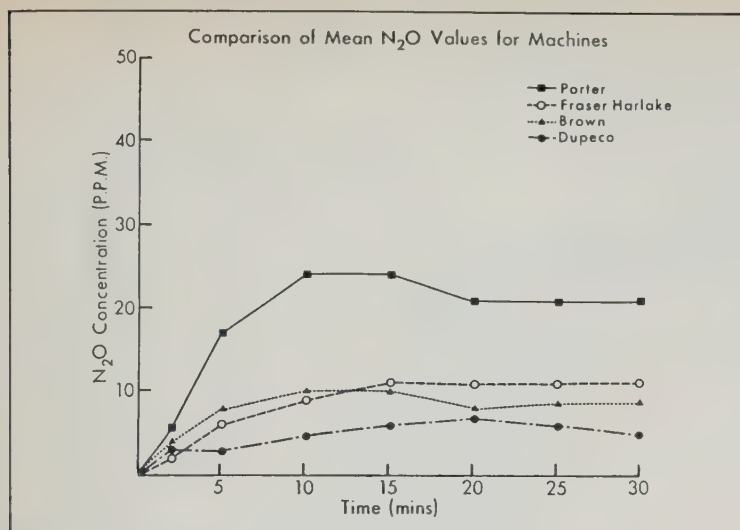


Fig. 5. Comparison of mean N_2O values for machines.

patient, rather than towards the rim of the mask.

The dramatic change in levels in the two Fraser Harlake studies must obviously be due to the difference in the machines used. However, the main differences between the two machines is that the Fraser Harlake has a non-return valve where the gases exit and a negative pressure valve which allows room air to enter the system when insufficient gases are being provided. It is difficult to understand the former being a factor, while the negative pressure valve has frequently been the source of nitrous oxide pollution.

The even greater improvement brought about by the substitution of a Porter machine in that series of investigations is easier to explain. Again the Porter machine has a one-way non-return valve not present on the Dupaco. The Porter scavenging system has two suction systems, one operating the two sweeper valves and one evacuating the main mask, but only intermittently; that is, when the patient exhales. It can be assumed that this second mechanism is controlled by a slight increase in pressure in the circuit. With the absence of a non-return valve in the Dupaco machine, it is probable that this increase in pressure is allowed to be absorbed by the reservoir bag and thus does not trigger the major suction mechanism.

The reason for the even lower levels achieved once the tubings had been inspected could well be due to the correction of any kinking in the smaller inner tubing of the system, as suggested by the manufacturers. This would have the effect of cutting off the suction to the sweeper flanges. The Porter representative suggested that this would be remedied in the future by welding the inner tubing to the walls of the outer tubing.

Conclusion

All systems tested were capable, under ideal conditions, of controlling levels of nitrous oxide to below 50 p.p.m. The Porter and Fraser Harlake systems worked best when matched with their respective nitrous oxide delivery system. Δ

Acknowledgment

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Reprint requests to Dr. Donaldson.

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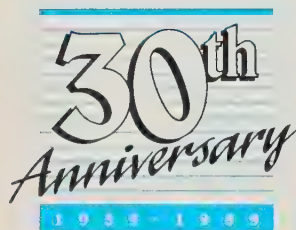
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The efficiency of nitrous oxide scavenging devices in dental offices

D. Donaldson, BDS, FDSRCS, MDS

J. Grabi, DDM

Vancouver, B.C.

ABSTRACT

Five scavenging systems were installed in 10 dental office and the levels of nitrous oxide were closely monitored for each. While the readings were higher than the previous non-clinical study, all appeared to be reasonably efficient. The various factors which caused increases in background levels were also recorded in the investigation.

Introduction

In the previous study comparing various nitrous oxide scavenging systems, the test conditions were optimal in order to avoid the many variables that occur in dental offices. The logical extension of this investigation was to record the efficiency of the systems under various clinical operating conditions. This would allow some assessment of the "forgiveness" of each system, meaning their ability to overcome everyday clinical problems such as mouthbreathing, patient movement, ill-fitting masks or inadequate suction.

Methods and Materials

Five systems were tested in 10 dental offices. The systems were the Brown, Dupaco (Allen), Fraser Harlake (Ohmeda), Porter and the Parkell.

Each of the 10 offices was allowed to use a particular system for six weeks and after this period of adjustment to the apparatus, the operatory was monitored for nitrous oxide contamination.

A Miran 103 Portable Vapour Analyzer was set up such that the sensor was placed on the opposite side to the dentist but at the same height as his head and the same distance from the patient. The nitrous oxide levels were recorded on a strip chart with an averaging system interposed between it and the analyzer. This allowed a time weighted or average level to be recorded over the entire period of use of nitrous oxide while also recording continuous levels of nitrous oxide.

An observer was placed by the strip chart in such a position that he could view the clinical procedures closely. Whenever there was a sudden increase in nitrous oxide levels it was the observer's duty to assess why this occurred. The

reason, such as a patient speaking, was written directly onto the strip chart opposite the increased recording. At the end of the investigation the most common sources of nitrous oxide contamination could be tabulated.

There were no limits placed upon either the flow of nitrous oxide or its percentage since this would of course be established according to the patient's needs and the judgment of the dentist. The only requirements were that recordings not be initiated until the baseline level for the operatory had reached 0 parts per million (ppm) and that the patient be given 100 per cent oxygen for two minutes prior to and following the administration of the nitrous oxide.

The type of ventilation system in each office was also noted in case this had some bearing on contamination levels. For similar reasons, the time taken for levels to return to zero following administration was recorded.

Results

Table I illustrates the number of tests carried out in the 10 dental offices. The

TABLE I

Number of tests in dentists' offices

OFFICE	I	II	III	IV	V	VI	VII	VIII	IX	X
MASK TYPES:										
BROWN										
35 tests:	10	9	2	7	2	2	—	1	—	2
PORTER										
29 tests:	2	10	5	6	2	1	1	—	—	2
PARKELL										
24 tests:	5	7	2	5	5	—	—	—	—	—
DUPACO										
23 tests:	1	16	—	—	—	1	5	—	—	—
FRASER HARLAKE										
33 tests:	13	2	5	6	3	2	—	2	2	—
TOTAL	31	44	14	24	12	6	6	3	2	4

variation in the number of trials between offices was due to the variation in the frequency of use of nitrous oxide. Apart from Office I, which was that of an oral surgeon, the others were those of general dental practitioners. The 10 offices carried out a total of 144 tests on the five systems which each system being tested between 23 and 35 times.

Tables II and III demonstrate that there was a surprisingly close grouping of mean values for the five systems tested. The Brown mask maintained its position as being one of the most effective systems in the non-treatment series carried out previously. It should be noted that this was using the mask without a neck harness holding it in place, which is recommended by some users of this mask.

The Porter system also produced an acceptable mean value which was not too different from the results found in the non-clinical trials.

The Dupaco system dropped from the front runners of the non-clinical investigation. Although it did not achieve mean results below the recommended 50 p.p.m.

at every session, the levels were relatively close when we remember that without any scavenging, levels of several thousand p.p.m. may be reached.

The reasons for sudden increases in nitrous oxide levels are illustrated in Table IV. It is of significant interest that talking was a major source of air pollution.

An attempt to correlate the speed at which nitrous oxide levels dropped to zero following administration with the average levels of the gas in individual offices proved fruitless. This suggests that the efficiency of an operator's ventilation system was not a significant factor in reducing nitrous oxide levels in this study.

Discussion

Considering the degree of concern expressed regarding nitrous oxide pollution in dentistry at the beginning of this decade,^{1,5} there have been few studies completed which compare the clinical efficiency of the various scavenging systems. The major reason for this is

TABLE II

Comparison of the tested masks

MASK TYPE	MEAN PPM N ₂ O
35 BROWN	43.4
29 PORTER	48.2
24 PARKELL	54.4
23 DUPACO	61.2
33 FRASER HARLAKE	62.7

probably the many variabilities which complicate such a study. However, Hallonsten in Sweden,^{6,7} and, more recently, Allen⁸ in Britain and Sher et al in South Africa⁹ have investigated this area and highlighted the problems incurred with attempts to reduce nitrous oxide levels. Their studies, however, involved the collection of gases throughout a procedure and the analysis of the nitrous oxide content later which was then time weighted. The study described here allowed continuous monitoring of levels and the reporting of factors which caused sudden rises in gases levels within a dental operatory.

The importance of clinical trials for these scavenging systems is borne out by the difference in results of the clinical and non-clinical studies. In the previous non-clinical study, the Porter system gave relatively poor results while clinically its performance improved. It should be noted, however, that one office did average 250 p.p.m. with this system (Table III). This may well be because of a malfunction of the complex evacuation mechanism of this system as such problems were noted by ourselves in the non-clinical study. The Porter results for that dental office were therefore eliminated from the study.

The Dupaco system appeared to be excellent before the clinical trials. The

TABLE III

Test summaries average total ppm N₂O values in dentist's office and masks

OFFICE	I	II	III	IV	V	I	VII	VIII	IX	X	MEAN
MASK TYPES:											
BROWN	32.09	23.7	39.5	43.3	24	74	—	46	—	68	43.4
DUPACO	89	38.6	—	—	—	73	45.5	—	—	—	61.2
FRASER HARLAKE	76.7	45.3	66.0	48.2	54.3	—	—	—	86	—	62.7
PARKELL	56.6	66.7	73.5	39.8	35.6	—	—	—	—	—	54.4
PORTER	[250]*	70.2	18	50	43.0	—	—	—	—	63	48.2

* Eliminated from mean.

TABLE IV

Reasons for leakage

Talking	48%
Movement	48%
Poor Mask Fit	36%
Restlessness	12.4%
Technical Problem	9.5%
Mouthbreathing	2.8%
Mask Moved	4%
Moustache	3%

reason for its poorer performance could be the lack of any sweeper system to collect gases escaping from the nose and mouth areas.

When comparing averages achieved by the different offices (Table III), it is apparent that no individual dentist achieved consistent levels with all systems. However, some appeared to obtain better results with one particular system.

Various authors have noted the problem of pollution caused by the patient speaking, and this is borne out in Table IV by illustrating that talking was a major cause of contamination. Particular attention should be paid, therefore, not only to instructing the patients not to talk but also to ensure that the dentist and his staff do not ask questions which require a verbal reply. This can prove to be difficult as many dentists use verbal response as an indication of the depth of sedation.

Movement of the patient again should be kept to a minimum as this tends to cause displacement of the mask. Poor mask fit has also been cited by others as

a reason for leakage. The Porter system has attempted to overcome this by the insertion of a copper wire in the sponge periphery of the nosepiece which allows the mask to be molded to the patients features. The brown mask relies on its peripheral suction to overcome this and some clinicians claim that in this system mask fit is not so important.

Although the Fraser Harlake (Ohmeda) mask has a scavenging cone designed to overcome peripheral mask leakage, clinical testing demonstrated a problem with this system. The vacuum system which operates the cone caused a continual hiss which invariably annoyed the dentist. Many found that by decreasing the force of the vacuum, the noise became less. However, this also decreased the efficiency of the scavenging cone.

Conclusion

All systems, therefore, provided good scavenging efficiency when compared to levels reported without scavenging. Although these achieved levels were not always below the recommended 50 p.p.m., this figure was an arbitrary one, chosen only because it appeared to be an achievable level. If studies by Sweeney et al¹⁰ prove correct in their suggestion that acceptable levels can be several hundred p.p.m., it would indicate that all systems perform well in producing safe levels. Δ

Acknowledgment

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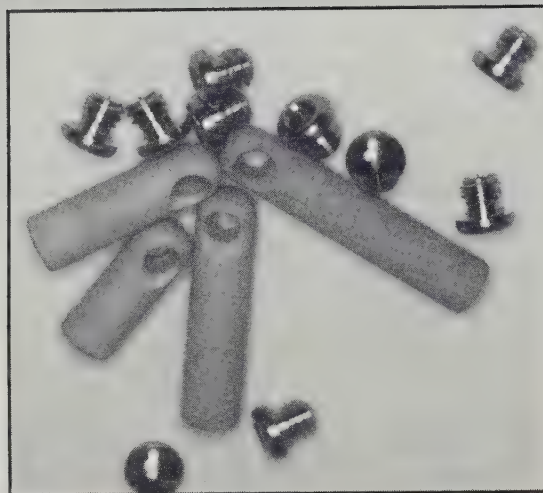
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Surface quality of gypsums when poured against alginates

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ABSTRACT

Alginate impression materials are universally accepted for the fabrication of dental casts. Since casts reflect a direct link between the patient and the dentist, it is imperative that their surfaces be of highest quality. This study assesses the quality of dental cast surfaces when poured against alginate impression materials. A standardized system previously designed by the authors allowed the evaluations of 16 different gypsums poured against 32 different alginate surfaces, including a plexiglass control surface. Five hundred and twelve gypsum surfaces were produced and evaluated for quality in the following manner: 1) assessed visually with the aid of photomicrographs for surface smoothness; 2) evaluated by a modified Vickers scratch test for surface hardness. The results indicate that certain gypsum-alginate combinations provide superior surfaces with respect to hardness and smoothness, while other combinations suggest a high degree of incompatibility.

SOMMAIRE

Pour la fabrication de modèles dentaires, les matériaux d'empreinte en alginate sont universellement reconnus. Comme les modèles constituent un lien direct entre le dentiste et son patient, leurs surfaces doivent nécessairement être de la meilleure qualité. Dans cet article, on mesure celle des surfaces des modèles dentaires coulés avec des matériaux d'empreinte en alginate. Recourant à une méthode normalisée conçue antérieurement, on a procédé à l'évaluation de 16 gypses différents coulés contre 32 surfaces différentes en alginate, dont une surface de contrôle en plexiglas. On a produit et évalué 512 surfaces de gypse de la manière suivante: 1) en évaluant visuellement le poli à l'aide d'appareils de photomicrographie, 2) en mesurant la dureté à l'aide d'une version modifiée du test de Vickers. Les résultats ont révélé que certaines combinaisons de gypse-alginate donnent des surfaces de qualité supérieure touchant la dureté et le poli,

alors que d'autres dénotent un haut degré d'incompatibilité.

Introduction

The fabrication of both diagnostic and working casts has become universally accepted as an integral part of dental treatment. This direct link between the patient and various phases of clinical treatment requires that the cast be accurate and of the highest quality.¹

It is well recognized that casts fabricated with some alginate impression materials often have poor surface quality.² This undesirable effect may be the result of many factors, not the least of which could be the incompatibility of various dental stones with some alginate impression materials.³

In 1965, Chong et al⁴ observed that alginate surfaces formed against moist tissues were different from those formed against metal dies. Alginate impressions were made of the mouth and casts were fabricated using seven different stones

TABLE I

Gypsums

PRODUCT	MANUFACTURER
1) PRIMA ROCK	Whip-Mix Corp.
2) SUPER DIE	361 Farmington Ave.
3) SILKY ROCK	Louisville, Ky.
4) JADE STONE	U.S.A. 40217
5) COECAL	Coe Laboratories Inc
6) SUPERCAL	3737 West 127th St.
	Chicago, Ill.
	U.S.A. 60658
7) DIE KEEN	Columbus Dental
8) DIE STONE	705 Progress Ave.
9) INDIC DIE STONE	Scarborough, Ont.
	Canada M1H 2X1
10) VELMIX	Kerr Canada
11) RAPID STONE	6845 Rexwood Rd.
12) SUPRA STONE	Mississauga, Ont.
	Canada L4V 1R2
13) GLASTONE 2000	Dentsply Canada
14) GLASTONE	1100 Lodestar Rd.
	Downsview, Ont.
	Canada M3J 2Z4
15) DURALIT	Degussa Canada Ltd.
16) DURALIT S	4261 Mainway Dr.
	Burlington, Ont.
	Canada L7L 5N9

and one plaster. The gypsum surfaces were rated and ranked employing visual inspection. They also measured the setting time of the gypsum products and concluded that alginate gypsum combinations which rated worst (fair-poor) also had the most marked effect on the setting time (i.e., accelerating or retarding) of the gypsum.

Morrow et al² in 1971 compared four alginates with five dental stones using a standard test block with inscribed lines. The quality of the 0.025-mm wide line reproduction was scored on a four-point basis. They also visually assessed gypsum surfaces with and without the assistance of 10 × magnification.

In 1972, Civjan et al⁵ studied alginate-gypsum compatibility using the standard inscribed test block and determined the effect of a wide variety of storage conditions. Using five dental stones and 10 different alginates, Jarvis and Earnshaw (1980)⁶ studied the physical and chemical structure of cast surfaces. They showed that there were differences between interior and surface reaction products as well as their respective physical structure. This illustrated the lack of homogeneity throughout the mass.

Khan et al (1984)⁷ reported on the effect that wet smoothing of alginate impressions had on the surface hardness

of casts. However, only three alginates and one stone were used in their study.

Owen,⁸ in 1986, studied the effects of using alginate fixing solutions. His study included 10 alginates and seven gypsums. He assessed compatibility by studying the alginates' ability to reproduce inscribed lines on a standard test block.

Previous compatibility studies by design, have not minimized as well as possible the variables of gypsum-alginate combinations. In 1976, Teteruck, Johnson and Plotske⁹ reported on the design of a system that compared stone samples poured against eight different alginates at the same time, thus greatly reducing the number of combination variables.

The purpose of this investigation was to assess the quality of gypsum surfaces (i.e., hardness + texture) when pouring against alginates, utilizing the previously reported method of evaluation. In doing so, this would provide the general practitioner with useful information in the selection of compatible alginate and gypsum products.

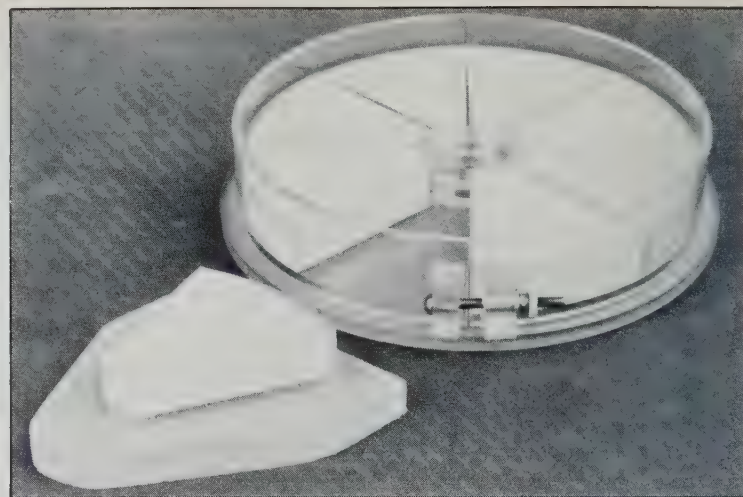


Fig. 1. Caddy containing eight different alginates arranged around a central plexiglass core.

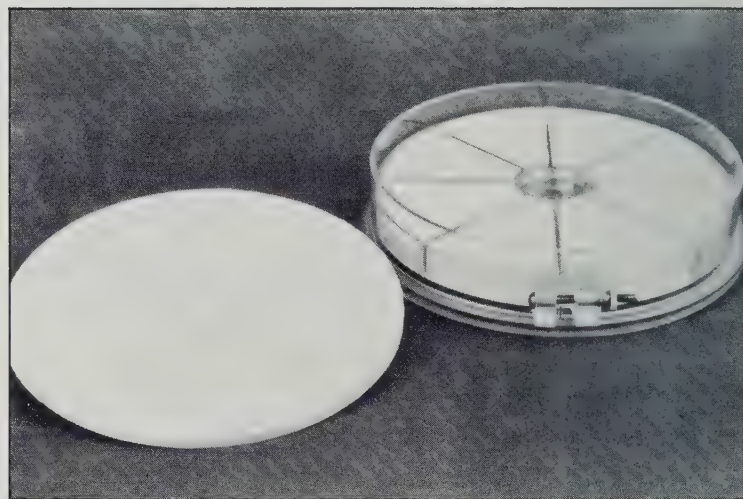


Fig. 2. Gypsum disc separated from alginate caddy.

Materials and methods

Sixteen gypsum products from six different manufacturers (Table I) were poured against 32 alginates from 15 different sources (Table II). Each gypsum product was poured into a caddy containing eight different alginates held in pie-shaped sections arranged around a central plexiglass core (Fig. 1).

All alginate impression materials were prepared according to manufacturers' directions using distilled water at $21 \pm 1^\circ\text{C}$. They were poured into individual pie-shaped sections, against a plexiglass plate, which provided a standard alginate surface. After the alginates set according to manufacturers' directions, they were inverted, placed in the caddy and maintained at 100 per cent relative humidity until the gypsum product was prepared.

Each gypsum product was prepared according to the manufacturers' instructions, using distilled water at $21 \pm 1^\circ\text{C}$. The mix was mechanically spatulated and poured individually against each series of eight alginates and the plexiglass core, which served as the control impression

surface. The gypsums were allowed to set in a 100 per cent relative humidity environment, separated after one hour and allowed to air dry (Fig. 2).

The gypsum surfaces from each combination were:

- 1) Photographed for texture, using a Bausch & Lomb stereoscopic microscope at 70X and T-Max DX100 Kodak film.
- 2) Tested for surface hardness employing a Vickers Scratch Test using a Leitz Wetzlar Miniload Hardness Tester with a 100p load.

Evaluation and results

Photomicrographs of 512 gypsum samples were classified into three categories according to surface texture (Fig. 3).

These categories are designated as:

- 1) superior, 2) average, and 3) inferior.

Photomicrographs of the gypsum samples poured against the central plexiglass core were used to establish the rating for superior. Photomicrographs rated as inferior were also readily identified. All remaining photomicrographs were classified as average. In order to categorize samples falling in the intermediate range between average and superior or inferior, discrimination was facilitated through the use of a mask with two viewing ports. Judgement as to ultimate rating was made by consensus.

The hardness evaluations were determined by measuring the width of three scratches and recording the values and their respective means in scaler units. The deeper the penetration, the wider the scratch, thus the softer the surface. There were standard differences between the 32 gypsum surfaces, as determined by analysis of variance, at a significant level of 0.001. The analysis was performed on the differences of the recorded values and the standard control values.

The maximum range of all the differences was established and divided into thirds. Those surfaces included in the first third were ranked as superior, those in the middle third as average, and those in the last third as inferior.

The surface quality of the gypsums rated in terms of hardness (first column identified with a notch at the bottom) and texture (second column), is shown in Fig. 4. When considering these values together, five different quality levels were identified. They are:

- Superior (2 dark areas)
- Above average (1 dark and 1 grey area)
- Average (2 grey areas)
- Below average (1 grey and 1 white area)
- Inferior (2 white areas).

TABLE II

Alginates

PRODUCT	MANUFACTURER
1) JELTRATE — Regular	L.D. Caulk Co.
2) JELTRATE — Fast	1100 Lodestar Rd.
3) JELTRATE-PLUS — Regular	Downsview, Ont.
4) JELTRATE-PLUS — Fast	Canada M3J 2Z4
5) BLUEPRINT — Regular	Amalgamated Dental
6) BLUEPRINT — Rapid	1100 Lodestar Rd.
	Downsview, Ont.
	Canada M3J 2Z4
7) PROOF — Regular	Kerr Canada
8) PROOF — Fast	6845 Rexwood Rd.
	Mississauga, Ont.
	Canada L4V 1R2
9) ALGINOID LD21 — Regular	Lang Dental Mfg. Co.
10) ALGINOID LD21 — Fast	2300 Wabansia Ave.
	Chicago, Ill.
	U.S.A. 60647
11) SUPER GEL — Regular	H.J. Bosworth Co.
12) SUPER GEL — Fast	7227 North Hamlin Ave.
	Skokie, Ill.
	U.S.A. 60076
13) ALGINATE — Normal	Coe Laboratories Inc.
14) ALGINATE — Fast	3737 West 127th St.
	Chicago, Ill.
	U.S.A. 60658
15) SHUR-GEL — Fast	Columbus Dental
16) SHUR-GEL — Regular	705 Progress Ave.
	Scarborough, Ont.
	Canada M1H 2X1
17) UNIJEL — Regular	Inter-Unitek Can. Ltd.
18) UNIJEL — Fast	1744 Midland Ave.
19) UNIJEL — (Dust free) — Fast	Toronto, Ont.
	M1P 3C2
20) IDENTIC — Regular	CADCO Dental Product
21) IDENTIC — Fast	8894 Regent St.
22) DUOLOID	Los Angeles, CA
	U.S.A. 90034
23) DUPALGIN — Regular	Ivoclar-Vivadent Can.
24) DUPALFLEX — Heavy	81 Kelfield St.
	Rexdale, Ont.
	Canada M9W 5A3
25) KEY TO ALGINATE — Normal	Teledyne Getz
26) KEY TO ALGINATE — Fast	1550 Greenleaf Ave.
27) KALGINATE — Regular	Elk Grove Village,
28) KALGINATE — Fast	Ill. U.S.A. 60007
29) J.L.B. #3	Brassler USA Inc.
	800 King George Blvd
	Savannah, GA
	U.S.A. 31419
30) ALGINATE SUBSTITUTE — Extra	Buffalo Dental Can.
	101 Sheldon Dr.
	Cambridge, Ont.
	Canada N1R 5W6
31) D.P. ELASTIC CREAM	Teledyne Getz
	1550 Greenleaf Ave.
	Elk Grove Village,
	Ill. U.S.A. 60007
32) PALGINEX — Regular	International Dental Products Inc.
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	Richmond Hill, NY
	U.S.A. 11418

GYPSUMS

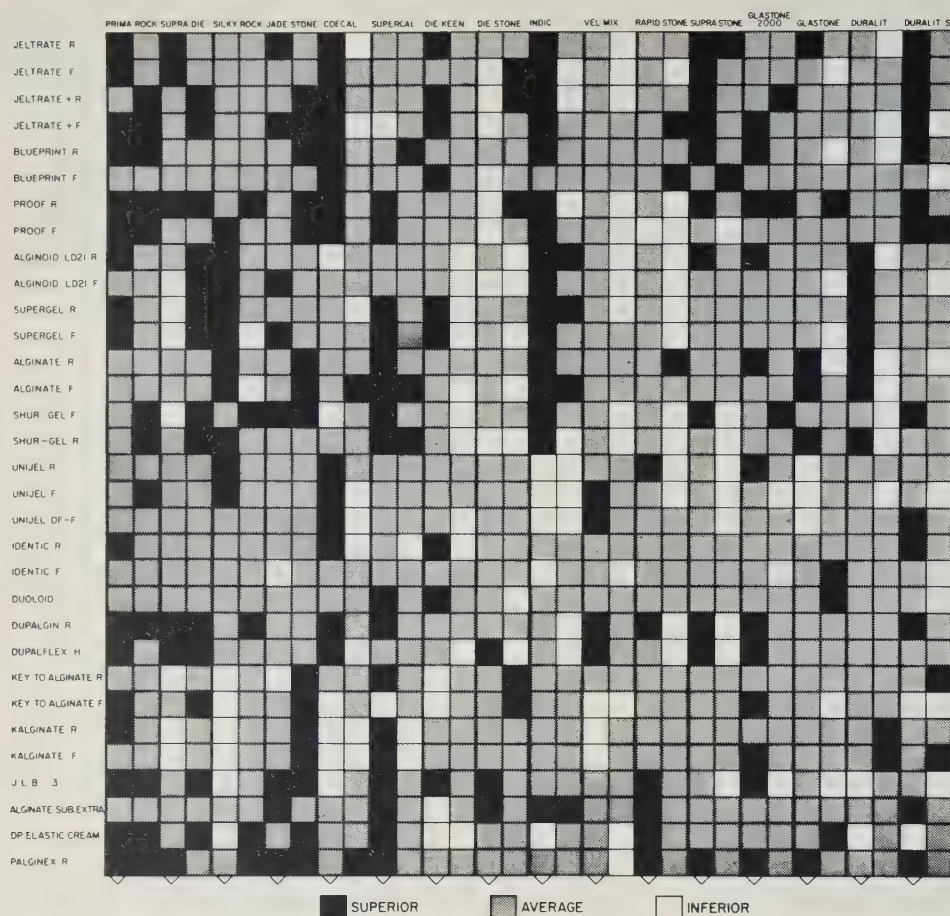


Fig. 3. Photomicrographs of representative gypsum surface textures used for classification.

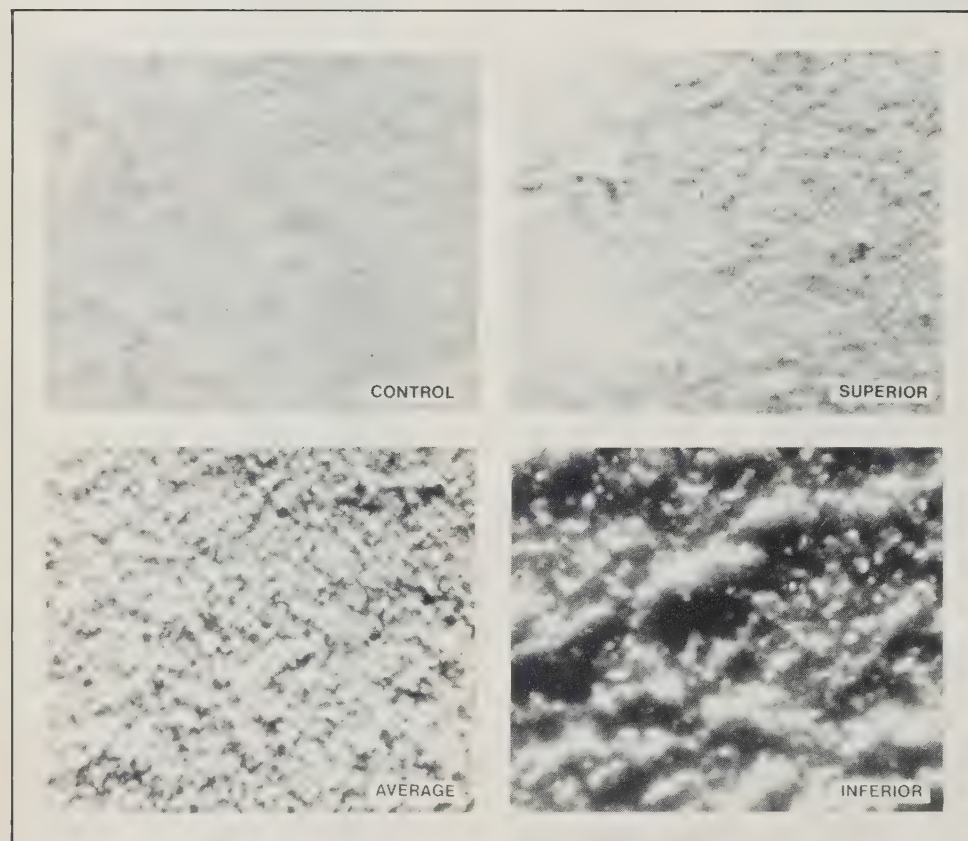


Fig. 4. Performance classification of alginate combinations. (Errata: second column should read SUPER DIE.)

Of the five quality levels produced by the alginate-gypsum combinations, there was no problem in determining the classification of superior, average or inferior. However, in determining the categories of above and below average, it was recognized that those classifications could have different significances, depending on which of the components (hardness or texture) was superior or inferior, respectively. For example, when the combination of Jeltrate R and Prima Rock was considered (Fig. 4), the hardness column indicated that the gypsum surface was superior (dark area). The texture column of the same combination was shown as average (grey area) and therefore, the quality level for this combination was classified as above average.

The reverse was shown for the Jeltrate + R and Prima Rock combination, where the hardness was noted as average (grey area) and the texture as superior (dark area). The quality level for this combination was also classified as above average.

It was recognized that the surface quality of a particular combination could have a superior hardness and an inferior texture or vice versa, and as a result, the quality level could be interpreted as being average, e.g., the Dupalflex H/Die Stone or Proof R/Die Stone combinations respectively. However, neither combination constituted a quality level that conforms to any of those described above and was therefore not classified.

Discussion

It was accepted that all of the alginate and gypsum materials studied were of high quality, and therefore, serve a useful purpose in a variety of dental procedures. For this reason, no attempt was made to identify the "best" or "worst" alginate or gypsum. However, it was recognized that various alginate-gypsum combinations produce gypsum surfaces of varying quality.

The use of a standard test block with inscribed lines was not considered for evaluation, although such a device may be useful for assessing elastomeric and reversible hydrocolloid impression materials, where the capture of fine detail is necessary. The need to replicate the 0.025 mm line may far exceed the purpose for which alginate impression materials were designed and for the procedure for which it was being used.

The inability to record a 0.025 mm line may not be a fair test for alginate systems, due to the "pebbled" surface normally formed by the gel matrix/filler structure of the alginate. For this reason,

such fine detail may be lost in the texture of "the best" alginates. If detail of this magnitude is critical to the design of a prosthesis or for diagnostic procedures, then an impression material other than alginate should be selected.

The effects of various storage conditions were not considered, including storage in various salt or fixing baths, because storing alginate impressions or delaying the pouring of the cast was not to be encouraged for any reason. Neither was the wet smoothing of alginate impressions included because it was not recognized as a universal technique.

The dental profession perceives that when it utilizes two quality products (i.e., alginate and gypsum), the final by-product will also be a quality one. It was our experience that this may or may not be so. Consequently, the criteria for evaluating the test product of the various alginate-gypsum combinations must be based on the quality of the gypsum surface created. This property should be of universal concern to all dental practitioners.

Summary and conclusions

The purpose of this investigation was not to determine the best gypsum or alginate but to identify those combinations which produce the best quality gypsum surfaces.

The quality of 512 gypsum surfaces — the result of 16 gypsums poured against 32 alginates — was assessed. There was obviously a wide range of performance between the different combinations. It was apparent that some gypsums produce superior and above average surface quality when combined with certain alginates. On the other hand, it was equally apparent that some produce inferior and below average surface quality when combined with certain alginates. It was also apparent that some combinations produce average surface quality. But those which demonstrated combinations of superior and inferior quality together, could not be classified in this category. Δ

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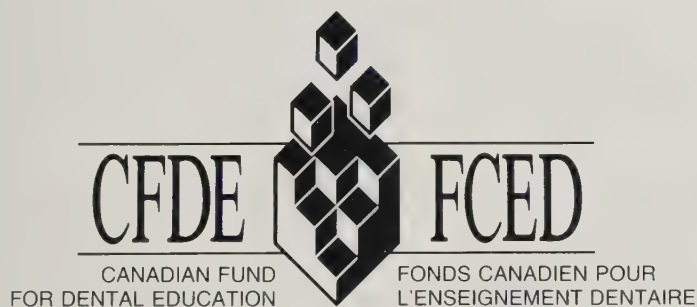
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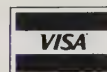


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Tooth loss in a selected population in Saskatoon

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ABSTRACT

Tooth mortality in a population can provide information about the prevalence of dental disease, availability of dental care and attitudes about tooth extraction. The tooth mortality of patients presenting for treatment at the University Dental Clinic (Saskatoon, Canada) during the school terms 1981-1986 was determined to provide base-line data during a time when the dentist-to-population ratio has been increasing, and to compare the results with similar studies carried out in Britain and Greece. The data were analyzed according to the same quinquennial age groups as in the other studies. There were no statistically significant differences between the two time periods at all ages and therefore the data were pooled. Totally edentulous persons were excluded from the analysis for comparison purposes. The prevalence of tooth loss increased with age with a rapid period of tooth loss encompassing the mean ages of 34 to 47 years, a slowing of further loss up to the mean age of 62 and thereafter, a further increase. The initial rapid loss was most apparent for molar teeth and least apparent for mandibular incisor teeth. With the exception of first molars, more teeth were lost in the maxilla than in the mandible. The present data are similar to the findings reported in British and Greek studies.

SOMMAIRE

Dans une population donnée, les pertes de dents peuvent fournir des renseignements sur la prévalence des maladies dentaires, la disponibilité des services et les attitudes des gens touchant l'extraction des dents. À Saskatoon, on a calculé les taux de pertes dentaires chez les patients qui se sont présentés à la clinique dentaire de l'Université durant les périodes scolaires de 1981 à 1986, afin d'obtenir des données de base au cours d'une période où le ratio dentiste:population était à la hausse et de comparer les résultats obtenus à ceux d'études similaires effectuées en Grande-Bretagne et en Grèce. Tout comme dans ces études, on a analysé les données recueillies à partir des mêmes groupes d'âge quinquennaux. Comme il n'y avait pas, statistiquement, de différences marquantes entre les deux périodes de temps pour tous les groupes d'âge, on en a combiné les données. Pour des fins de comparaison, on a éliminé de cette étude les personnes complètement édentées. La prévalence des pertes dentaires augmentait avec l'âge, s'accroissant entre les âges moyens de 34 à 47 ans pour ralentir ensuite jusqu'à l'âge moyen de 62 ans avant de s'accroître de nouveau. Durant la première période où les pertes s'accroissaient, on comptait plus de molaires que d'incisives mandibulaires de perdues. Sauf les premières molaires, on

relevait plus de pertes de dents du maxillaire que de la mandibule. Ces données sont similaires à celles des études faites en Grande-Bretagne et en Grèce.

Several studies indicate the usefulness of tooth mortality as an indicator of dental status within a community,¹⁻³ while others show an almost direct relationship between increasing age of the patient and loss of teeth.^{4,5} Tooth mortality figures provide a readily assessable index of community dental status, and a multiple series of such surveys over a period of time may indicate the effectiveness of the dental services provided to the community in combating tooth loss under the prevailing pattern of dental disease. The extent of tooth loss in a given population may also reflect the availability of dental care and attitudes of both dentists and patients concerning the extraction of teeth.^{6,7} This information can be obtained quickly and simply with a small probable error in recording the data.^{2,3}

Very little data are available for tooth mortality in adults residing in Saskatchewan. The aim of the present study was to examine the pattern of loss with age for individual teeth in patients seeking care at the College of Dentistry, University of Saskatchewan. These results could

TABLE I

Tooth Mortality Expressed as a Percentage of Erupted Teeth

Mean Age	No. of Subjects	Second Molars	First Molars	Second Premolars	First Premolars	Canines	Max. Incisors	Mand. Incisors	All Teeth
17	34	2.2	6.6	3.7	5.9	1.5	4.4	2.9	3.9
22	192	2.3	7.2	7.2	6.3	1.3	2.5	1.0	4.0
27	153	10.9	23.0	11.4	9.9	1.6	6.9	0.5	9.2
32	136	15.4	21.5	14.7	13.2	3.5	9.0	1.3	11.2
37	90	20.8	31.7	18.1	14.4	4.7	10.8	2.8	14.8
42	76	41.1	49.7	35.5	22.7	11.8	24.0	3.3	26.9
47	48	47.4	65.1	45.3	30.2	19.3	40.6	1.0	35.6
52	68	43.8	45.2	36.8	29.0	12.5	26.5	6.3	28.6
57	39	49.4	58.9	42.9	25.0	14.7	21.8	8.3	31.6
62	52	43.3	56.7	42.8	30.3	17.3	37.0	9.1	33.8
67	48	57.3	65.1	48.9	35.4	22.4	45.3	7.8	40.3
72	27	55.6	62.9	44.4	26.9	17.6	32.4	9.3	35.6
77	18	72.2	84.7	62.5	54.2	34.7	51.4	26.4	55.2

provide baseline data for future investigations which would facilitate the assessment of tooth mortality in a longitudinal manner in the same locale.

Materials and Methods

A sample of 560 patients 15 years of age and older was selected randomly by the central records staff from patients screened in 1986 and accepted for treatment at the College of Dentistry. The charts of these patients were reviewed and teeth missing at the initial visit were recorded as lost. In calculating the percentage of teeth lost it was presumed that all teeth had at one time been present. Due to the variability in their presence, third molars were excluded from the calculations. In order to compare the results of the present study to tooth mortality prevalences in a similar sample five years earlier, a random selection of 560 charts of patients accepted for treatment at the College of Dentistry in 1981 was analyzed in a similar manner. The data collected were arranged in quinquennial age groups, and totally edentulous persons were excluded in the analysis to facilitate comparison with previous studies of similar populations in other locales (viz. Athens,³ Leeds⁵).

Results

Tooth mortality prevalence at all ages did not vary significantly ($F = 0.226$, $p > 0.25$) between the 1981 and 1986 groups and hence the data were pooled for subsequent analysis. The age distribution (Fig. 1) indicates that higher numbers of elderly patients (62-77 mean age groups) are seeking care at this locale than reported over a similar time period in the Athens or Leeds studies. The present sample, contained proportionately less persons in the two youngest age groups.

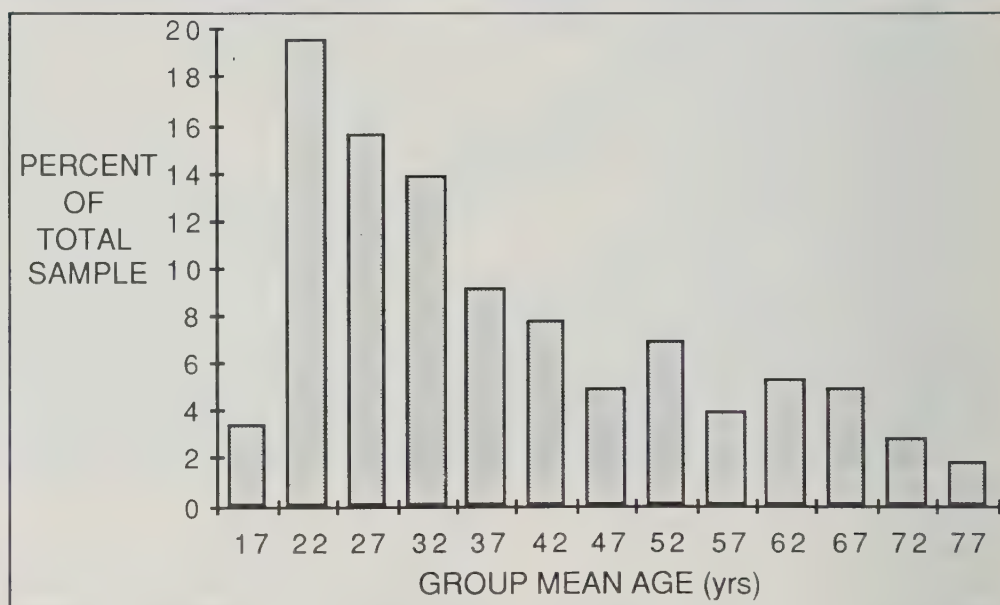


Fig. 1. Age distribution of sample.

Similar to the other studies, most of the sample was made up of those in the 22 to 37 age groups.

With the possible exception of the data from the 42 and 47 year mean age groups, the pattern of tooth loss with age, when considering all teeth, showed an expected increase from the mean age of 42 to the oldest age groups and is very similar to that from Athens and Leeds (Fig. 2).

Fig. 3 illustrates the percentage loss of individual teeth in the maxilla and mandible for all ages. In both the maxilla and mandible, the first molars had the highest prevalence of loss, while the canines had the lowest.

Mortality rates for individual teeth by mean age are presented in Table I.

2nd molars: An increase in mortality of these teeth was observed from the mean age of 22 years, reaching a prevalence of 72 per cent in the oldest age group.

1st molars: The loss of 1st molars was

higher at all age groups than all other teeth, with nearly 50 per cent lost by the fourth decade of life and 84 per cent in the oldest age group.

2nd premolars: The mortality within age groups increased slowly but steadily to age group 47 when about 40 per cent of second premolars had been lost. Thereafter, there was little change in the prevalence of loss of these teeth until the oldest age group.

1st premolars: The mortality of the first premolars was less than that of the second premolars at all ages, with a 50 per cent loss occurring only during the seventh decade.

Canines: The mortality of the canines was relatively low with less than 10 per cent lost before the mean age of 37. However, by mean age of 47 the prevalence of loss had doubled to nearly 20 per cent. Thereafter, with some fluctuation there was little change in percentage tooth loss until the oldest age group.

Maxillary incisors: A pattern of tooth loss similar to the canines but at a somewhat increased level was apparent for the maxillary incisors.

Mandibular incisors: The mandibular incisors had a relatively low prevalence of tooth loss, not achieving a level approaching 10 per cent until the sixth decade. Twenty-six per cent of mandibular incisors were lost in the oldest age group.

Discussion

There is no information concerning tooth mortality in the Province of Saskatchewan, and the present investigation is the first study based on a selected population attending a university dental clinic in the city of Saskatoon, Saskatchewan. The extent of tooth loss in a given population may not only give information about the prevalence of disease but also about the availability of dental care and the attitudes of both dentists and patients about tooth extraction.⁶⁻⁸ By drawing this sample from persons attending a university clinic, the probability exists that the persons selected will have a greater interest in dental care and reduced tooth mortality than the population at large.² This population would thus more likely reflect treatment availability and outcomes. The Dental College at the University of Saskatchewan was established in 1967 and since that time the dentist-to-population ratio in the province has increased from 1:4197 to 1:2792. Information about what effect, if any, the increased availability of dental manpower will have on tooth mortality will not become apparent until the results of future studies become available.

With the exception of the mean age groups 42 and 47, the similarity of the pattern of prevalence of tooth loss with age among the three locales of Saskatoon, Athens and Leeds is striking. Where differences exist, it is probable that they are not significant, based on the information from the present results concerning the mean tooth loss in each age group and the distribution and numbers of subjects in each study.

With the exception of first molars, a greater percentage of teeth were lost in the maxilla than in the mandible. This is similar to the findings in Athens and is attributed, in part, to the higher rate of caries attack on mandibular first molars.⁹ Another contributing factor could be the more frequent provision by dentists of maxillary complete dentures than mandibular complete dentures.^{10,11} This was supported by the findings in the present study which indicated that when a person was edentulous in only one arch (10 per

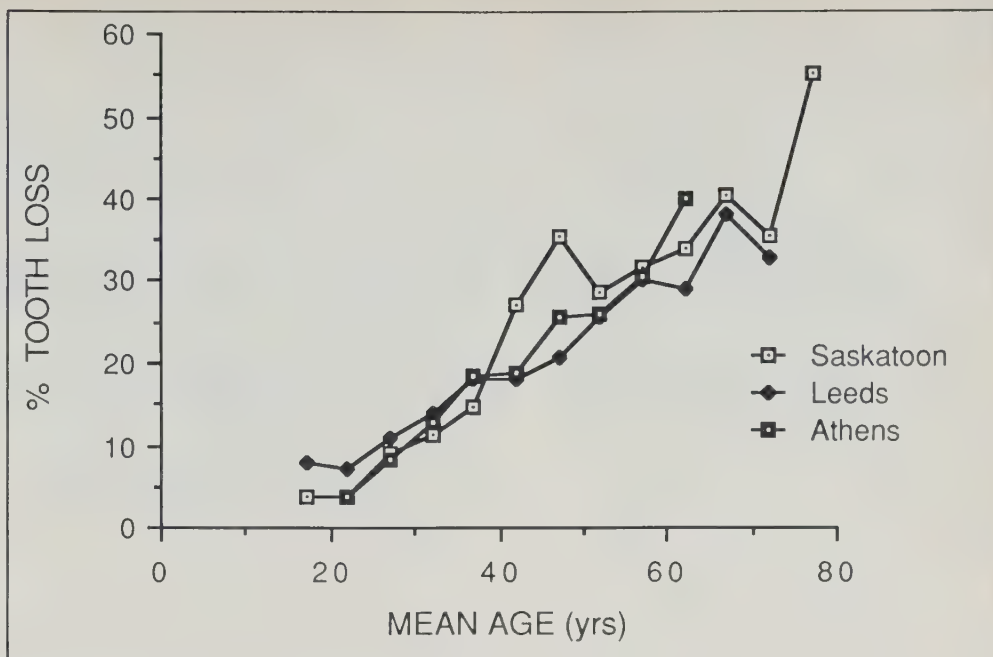


Fig. 2. Percentage mortality of all teeth.

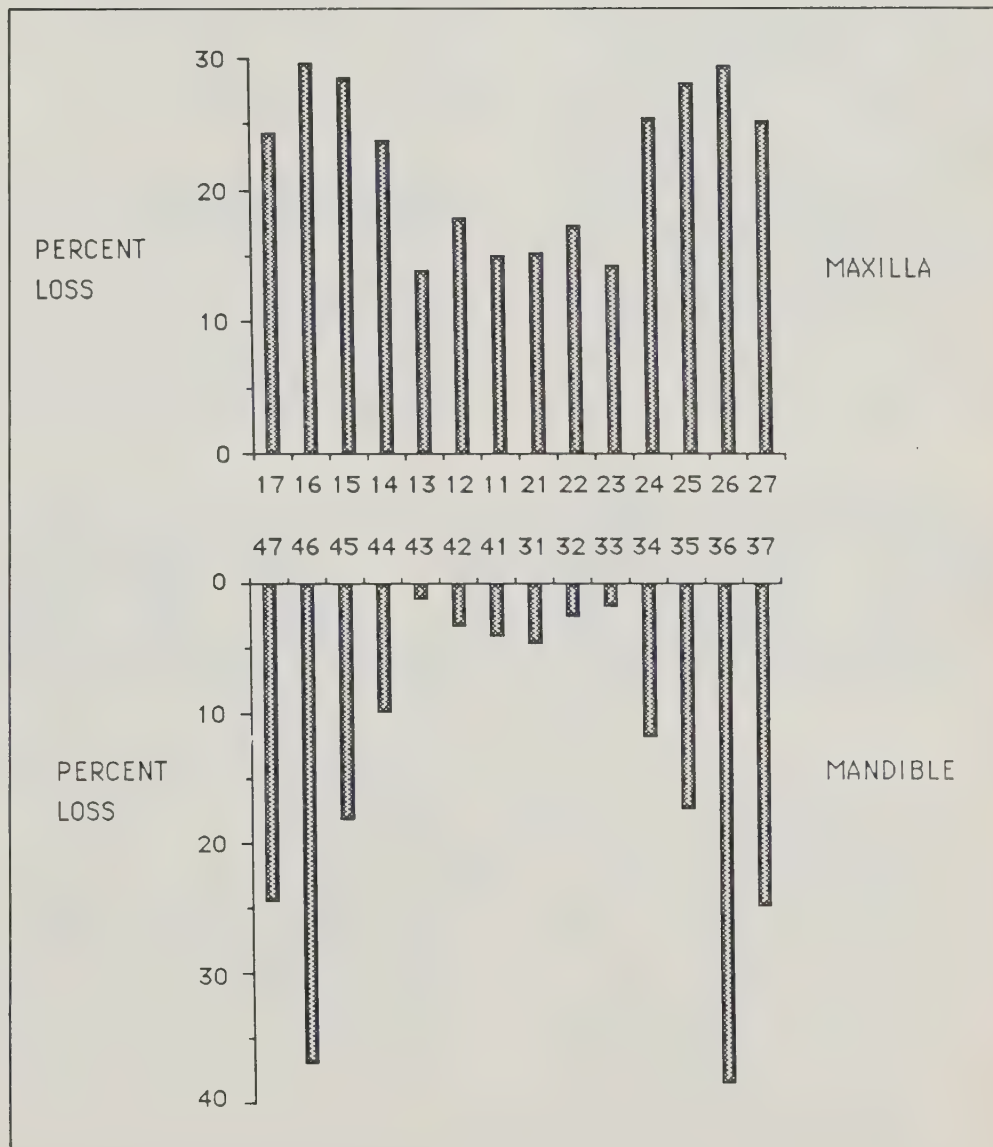


Fig. 3. Percentage loss of individual teeth (all ages combined).

cent of the sample population), this arch was invariably the maxilla.

About 80 per cent of the teeth lost can be accounted for by molars and second premolars and over half of these teeth had been lost by the end of the third decade of life. Thereafter, there was little additional loss of teeth until the oldest age group. Extraction of teeth before the fourth decade of life appears to be mainly due to caries.¹²⁻¹⁴ In a Finnish population the largest number of extractions occurred in 21- to 30-year-olds and the next largest in the 31 to 40 year group where this was attributed to extractions due primarily to caries.¹⁴ It might be expected by these ages that many tooth surfaces, especially molars, will have restorations. Whether the extractions were due to caries at new sites or recurrent caries associated with existing restorations is not clear. This would be a distinction worth investigating if tooth mortality information is to be fully utilized as a measure of treatment outcomes.

After the mean age of 47, mandibular incisors showed the greatest increase in mortality in the Saskatoon population. Beyond age 40, periodontitis overtakes caries as the main cause of tooth loss in some locales^{12,13} but not all.^{4,7} However, whatever the overall cause of extractions, mandibular incisors are most often extracted for periodontal or preprosthetic reasons,^{12,14} and this most likely accounts for the increased prevalence of

loss of these teeth in the present study sample beyond the mean age of 47.

To better understand the causes for the prevalence of tooth loss in a given population, assessments must be made of both the non-disease and disease reasons for extraction. As well, some assessment of the influence of known standards of dental care on tooth loss can be made by longitudinal comparisons between the prevalence of tooth loss in patients who first present for dental care, as in this study, and those who have been receiving care for some time at that clinic. A university dental clinic provides a relatively well controlled environment for such studies and these are currently underway at this institution. Δ

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THAT'S HOW MANY
CANADIANS ARE
WATER SKIERS



Way to go, Canada!



Dental insurance and its effects among the elderly in Ontario

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ABSTRACT

This paper examines the association between dental insurance, dental utilization and oral health outcomes among elderly people living independently in two communities in Ontario. Dental insurance had no independent effect on use of dental services, dissatisfaction with oral health status or clinically defined treatment needs. However, dentate attenders were less likely to be dissatisfied with their oral health and less likely to need dental treatment than those defined as non-attenders. One unexpected finding was that the dentate elderly had higher levels of utilization than is often reported in the literature but still had high levels of treatment need.

SOMMAIRE

Dans cet article, on étudie les rapports entre l'assurance dentaire, le recours aux services dentaires et l'état de santé bucco-dentaire des personnes âgées vivant dans deux localités de l'Ontario. L'assurance dentaire seule n'exerce aucune influence sur le recours aux services dentaires, l'insatisfaction touchant l'état de santé bucco-dentaire ou les besoins en traitements cliniquement

reconnus. Toutefois, les personnes dentées qui demandent des soins ont moins sujet que celles qui n'en demandent pas d'être insatisfaites de leur état de santé bucco-dentaire et d'avoir besoin de traitements. Résultat inattendu, les personnes âgées qui ont des dents ont recours aux services plus souvent qu'on ne le signale, mais elles ont quand même besoin de nombreux traitements.

Introduction

This paper uses data from two recent studies of older adults in Ontario to assess the extent and effects of dental insurance coverage on this section of the population. These data allow us to address in the context of dentistry a major health care policy issue. That is, does the removal of some or all of the financial barriers to health services increase utilization of those services and lead to improvements in the population's health status? Since the Government of Ontario has established an advisory committee to develop a dental program for the elderly, this remains an issue of some concern.

The literature on dental insurance coverage, the use of dental services and

oral health status is not an extensive one. A review of studies of dental utilization published in 1984 listed only 36 papers and publications, out of a total of 309, which mentioned dental insurance coverage.¹ The reason for this is that dental insurance was not widespread in Canada or the U.S. until the 1970s and was not a major factor to be considered in understanding or predicting the use of dental health care. For example, in 1970 less than one per cent of the population of Ontario had dental insurance coverage; by 1979, this had risen to 43.4 per cent.² In response to this phenomenal growth, a number of studies were undertaken with the specific aim of estimating the effect of dental insurance on the consumption of dental care.

Early studies examined utilization rates associated with insurance plans offered by major companies or public bodies to their employees. These studies tend to be population specific and their results cannot be readily generalized.^{3,4} Later studies used econometric methods,⁵ cross sectional surveys^{6,7} or were quasi-experimental, observing the utilization of dental care before and after the inception of a dental prepayment plan.^{2,8} More recently, the results of a major experimental study using a randomized controlled design has been reported.⁹

Some of these studies report that insurance had some effect on dental utilization while others report no effects at all.

Lewis⁶ and Bullen⁷ undertook cross-sectional surveys of random sample of adults living in Ontario and compared utilization patterns among those with and without insurance. Lewis found that 45.8 per cent of his sample had some form of dental insurance and that 72.5 per cent of the insured and 59.4 per cent of the non-insured made at least one visit to the dentist in the year prior to the interview. Analysis of utilization by income and age showed that insurance had the greatest impact on low income groups, those aged 35 years and under and those aged 56 to 65 years. Too few individuals aged 66 years and over had insurance to make the analysis meaningful for the elderly. Bullen repeated the study in 1981 and found that 52.9 per cent had dental insurance. In 1980, insured respondents made 23.7 per cent more visits and had dental expenditures 42.1 per cent higher than the non-insured. A multiple regression analysis controlling for income, sex, education and dental status showed that insurance had a significant effect on utilization. Again, too few elderly subjects with insurance were included in the sample to make the analysis feasible.

While cross-sectional surveys can demonstrate an association between dental insurance and use of dental services, they cannot establish cause and effect relationships.¹⁰ The effects of insurance are best determined by experimental studies using a randomized controlled design. The Rand Health Insurance Study⁹ is the only study to have used this approach to estimate the impact of different cost-sharing arrangements on utilization of dental care by comparable groups. The study showed that the probability of any use over a period of a year, mean visits per person and mean expenditure per person were all higher for those enrolled in a free plan compared to those who paid 95 per cent of dental expenditures out of pocket. The study also showed that increased utilization as a result of a free dental plan produced improved oral health outcomes for children and young adults, particularly those from families with low educational status. Unfortunately, persons aged 62 years and over were excluded at the start of the study, thus no information was collected on the effects of dental insurance on the elderly.

Consequently, in order to look at this section of the population, we must use data from less methodologically sound

cross-sectional surveys such as those we have completed in East York and Ottawa-Carleton, Ontario. Because these studies included an oral health examination, we are able to assess the associations between insurance, the use of services and measures of oral health status in an elderly population.

Materials and Methods

The East York study was a socio-dental survey of a random sample of those aged 50 years and over living independently in the community. Data on dental insurance coverage and use of dental services were obtained from 474 persons, of whom 270 were 65 years and over. We also used personal interviews and clinical oral health examinations to collect more detailed data from 138 of these elderly subjects. The Ottawa-Carleton study was similar in most respects to the one undertaken in East York but confined to persons aged 65 years and over living independently in the community. In this

study, basic data were obtained from 586 persons, 299 of whom were subjected to a detailed personal interview and clinical examination. The methods and results of both studies have been described more fully elsewhere.^{11,12}

In order to examine the extent and effects of dental insurance coverage, we linked the personal interview and clinical

TABLE I

Percentage with dental insurance by age: East York and Ottawa-Carleton

Age	East York %	Ottawa-Carleton %
65 to 74 years	22.6	12.9
75 years and over	16.0	8.3

TABLE II

Associations between utilization of dental care and independent variables

Variable	% Classified as attenders	Statistical significance
Insurance		
Yes	60.7	p < 0.05
No	43.4	
Education		
Up to high school	37.9	p < 0.0001
More than high school	61.1	
Occupancy status		
Owner-occupier	55.0	p < 0.0001
Renter	31.8	
Receive GAINS		
Yes	22.4	p < 0.001
No	51.0	
Dental status		
Dentate	66.2	p < 0.0001
Edentulous	2.1	
Disabled		
Yes	16.3	p < 0.0001
No	49.5	
Sex		
Male	45.7	NS
Female	45.8	
Marital status		
Married	45.9	NS
Not married	46.1	
Household composition		
Lives alone	50.7	NS
Lives with others	43.4	
Community		
East York	43.1	NS
Ottawa-Carleton	51.1	

data sets from the two community surveys for persons aged 65 years and over and examined the association between insurance coverage and 1) the use of dental services and 2) measures of oral health status. In all analyses the survey location was used as a variable to identify and control for any differences between persons living in East York and Ottawa-Carleton. The sample was predominantly dentate; 68.0 per cent retained one or more natural teeth.

Results

Insurance coverage

In East York, 21.3 per cent of those aged 65 and over reported that they were covered by a dental insurance plan which paid for all or part of their dental care. In Ottawa-Carleton, only 11.4 per cent reported dental insurance coverage. These differences were statistically significant ($p < 0.01$). **Table I** shows that insurance coverage was related to age in both communities, with the very old being less likely to have a dental plan. Among those not currently covered, 12.9 per cent reported that they had had a dental insurance plan in the past but subsequently lost coverage.

Utilization of dental care

In order to examine the effects of utilization, subjects were categorized as attenders or non-attenders. An attender was defined as a subject who reported at least one visit in the year prior to the interview and a regular source of dental care. This measure was used in preference to more conventional measures such as "one or more visits in the last year" because it was more effective in identifying the regular as opposed to the sporadic user. Overall, 53.5 per cent reported a visit to a dentist in the year prior to interview, 55.3 per cent reported a regular source of care and 44.6 per cent were classified as attenders.

Table II shows the association between utilization and a range of socio-demographic and other variables. Among those aged 65 and over, insurance coverage, dental status, education, occupancy status, receipt of Guaranteed Annual Income Supplement (GAINS), and disability status were significantly related to the utilization of dental services. Major differences were observed between the dentate and the edentulous; two thirds of the former but only 2.1 per cent of the latter were classified as attenders. There were no differences in utilization between subjects living in East York and those living in Ottawa-Carleton.

TABLE III

Results of the logistic regression analysis. Dependent variable: Utilization of dental care

Parameter	Estimate	Standard error	Significance
Constant	-2.1946	.2795	
Insurance	.2960	.2169	NS
Dental status	2.3484	.2609	$p < 0.0001$
Receive GAINS	-.4598	.2095	$p < 0.05$
Disabled	-.7825	.2911	$p < 0.01$
Education	.3673	.1574	$p < 0.05$
Occupancy status	.3616	.1572	$p < 0.05$

Logistic regression analysis was used to examine the association between use of dental care and insurance while controlling for all other independent variables. Insurance coverage was not significantly associated with utilization when controlling for these variables (**Table III**). However, the dentate, those with more than high-school education and owner/occupiers were more likely to be classified as attenders, while those receiving GAINS and those reporting limitations in activities of daily living were less likely to be so classified.

Dental insurance and oral health status

In assessing the relationship between dental insurance and oral health status, we used two types of measure of oral health. The first was a subjective indicator in the form of reported dissatisfaction with one or more aesthetic or functional components of oral health: namely, appearance, ability to chew and ability to speak. The second was an objective indicator in the form of clinically defined treatment needs. The percentage of the dentate and edentulous reporting dissatisfaction or found to be in need of dental care is given in **Table IV**.

Univariate and multivariate analyses were again used to examine the association between insurance coverage and oral health status. Because of their radically different treatment needs, separate analyses were undertaken for the dentate and the edentulous.

Simple cross-tabulations failed to show any differences between the insured and the non-insured in terms of dissatisfaction and clinically defined treatment needs. The logistic regression analyses confirmed these results; even when controlling for sociodemographic and other variables, dental insurance was not associated with oral health status for the dentate or the edentulous.

TABLE IV

Percent of dentate and edentulous who are dissatisfied with oral health or in need of dental treatment

	Dentate	Edentulous
Dissatisfied	36.9	25.8
Needing:		
Periodontal treatment	46.6	—
Restorations	52.2	—
Extractions	16.1	—
Prosthodontic care	38.7	48.2
Any treatment	78.5	48.2

When the association between utilization and oral health was examined, a more optimistic picture emerged. Simple cross tabulations revealed that dentate attenders were less likely to be dissatisfied and less likely to require dental treatment than non-attenders (**Table V**). No significant associations were observed among the edentulous with regard to dissatisfaction or need for prosthodontic care. These results were confirmed by a logistic regression analysis. Cross-tabulations and regression analyses also showed that there were no significant differences in treatment needs between dentate attenders with and without insurance and between those who did and did not receive GAINS.

Discussion

The elderly population included in our studies were less likely to be covered by a dental insurance plan than samples of Ontario's adult population. This is explained by the fact that almost all dental plans are an occupationally linked benefit which was not provided by

TABLE V

Percent of dentate attenders and non-attenders dissatisfied with oral health or needing dental care

	Attenders %	Non-Attenders %	Significance
Dissatisfied	15.2	46.5	$p < 0.0001$
Needing:			
Periodontal treatment	40.4	58.8	$p < 0.01$
Restorations	47.7	61.9	$p < 0.05$
Extractions	7.7	33.0	$p < 0.0001$
Prosthodontic care	25.6	64.9	$p < 0.0001$
Any treatment	72.3	90.8	$p < 0.001$

employers until the 1970s. Some of the subjects included in our studies would have left the labour force before such plans were offered or would have lost this benefit on retirement. Even where plans continue to fund dental care after retirement, the benefits are often less generous than they were while the individual remained in the labour force.

Our data suggest that dental insurance coverage has no significant independent effect on the utilization patterns of elderly people living in relatively affluent, urban areas. Those who retained one or more natural teeth reported high rates of utilization whether they had dental insurance or not. One possible explanation of this lack of a significant effect is that the insurance plans covering the elderly are insufficiently generous to promote the seeking of dental care. The Rand Health Insurance Study⁹ showed that there were no differences in utilization rates among people enrolled in plans in which enrollees paid 25 per cent, 50 per cent or 95 per cent of the costs of dental care. Only the plan in which all costs were paid had an influence on the use of services. One limitation of our studies is that we did not collect information on the structure of the insurance plans reported. Consequently, we have no information on deductibles or co-insurance rates and cannot examine their effects on utilization. Further work is planned which will collect such data.

Even though insurance was not associated with dental utilization among the subjects we studied, this does not mean that the costs of dental care are not an important concern with regard to this population. First, the low-income elderly, judged by their receipt of the Guaranteed Annual Income Supplement, were less likely to be classified as dental attenders when controlling for confounding variables such as education and dental status.

Second, even though the elderly without insurance are prepared to pay out-of-pocket for dental treatment, some may experience financial hardship as a result. For these reasons, some method of easing the financial burden for all or specific groups of Ontario's elderly should be considered. Some method of improving access to dental care for people with disabilities is also indicated. Arguably, this will promote access to dental care among the disadvantaged elderly and improve levels of oral health among these groups.

Although dental utilization was associated with better levels of oral health, many of the elderly classified as dental attenders needed some form of dental treatment. Periodontal treatment and restorations were needed by more than 40 per cent of attenders who retained one or more natural teeth. This discrepancy can be explained in a number of ways: 1) failures in recall mean that self-reports of utilization are not valid indicators of service use; 2) these treatment needs emerged between the last visit to the dentist and the survey examination; 3) dental practitioners are failing to diagnose the oral health conditions of their elderly patients; 4) elderly people postpone having dental treatment recommended by their dentists because of the cost; and, 5) dental practitioners and survey examiners use different clinical criteria in assessing treatment needs.

The data that we have at our disposal do not allow us to examine the relative merits of these explanations. Explanation number 4 does not seem credible, given that dentate attenders without insurance or receiving GAINS did not have higher treatment needs than the others. Our long-range research program includes studies which will cast further light on this issue.

Summary

This paper uses data from two studies of older adults in Ontario to assess the effect of dental insurance coverage on utilization of dental services and oral health outcomes on persons 65 years and over. The first was based on a random sample of those aged 50 years and above, living independently in East York, while the second was based on a random sample of persons aged 65 years and over, living independently in Ottawa-Carleton. Dental insurance coverage was reported by 21.3 per cent of those aged 65 and over in East York and 11.4 per cent of those in Ottawa-Carleton. In the analysis of utilization, dental attenders were defined as those reporting a dental visit in the previous year and a regular source of care. Among the combined samples, 44.6 per cent were classified as attenders. Those with insurance coverage were more likely to be classified as attenders as were the dentate, home owners, those with more than high school education, those who did report disability and those who did not receive GAINS. However, a logistic regression analysis revealed that insurance did not have a significant independent effect when controlling for other variables associated with utilization. Further analysis showed that insurance was not associated with reported dissatisfaction with oral health or clinically defined treatment needs. However, dentate attenders reported less dissatisfaction and were less likely to need dental treatment than dentate non-attenders. No such associations were found for the edentulous. The lack of an association between dental insurance and dental utilization may be due to the structure of the plans held by the elderly. Δ

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Le polissage des résines composites, étude *préliminaire* par réflexion laser

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RÉSUMÉ

Quatre sortes de résines composites ont reçu chacune douze traitements de surface différents. Un laser Hélium-Néon a été utilisé pour illuminer la surface de chacun des échantillons. Les faisceaux réfléchis, projetés sur un écran blanc, ont été photographiés et classés en ordre de diffusion croissante. Les données recueillies, bien que n'ayant pas de réelle valeur statistique, sont néanmoins indicatrices de l'utilité de la méthode d'analyse.

Mots clés: Résines composites, Polissage, Lasers.

ABSTRACT

Four types of composite resins have been submitted each to twelve different surface treatments. A Helium-Neon laser was used to illuminate these surfaces and the reflected beams were photographed. The pictures were ranked in increasing order of diffusion. The data collected in this pilot study, although they are not statistically valid, indicate that this method of analysis can be useful.

Key words: Composite resins, Dental polishing, Lasers.



Introduction

L'état de surface des matériaux de restauration a toujours été une préoccupation des chercheurs et des cliniciens. En effet, une surface rugueuse a comme conséquence une accumulation de plaque et la création de problèmes dentaires et parodontaux; pour les résines composites, s'ajoutent des problèmes de décoloration¹. Depuis l'introduction de

ces résines composites, le fini de surface qu'on pouvait leur donner a été plusieurs fois étudié, tant pour ce qui est des différences entre matériaux que pour des différences entre techniques de finition.

Les moyens classiques d'étude de fini de surface se limitent généralement à trois: l'utilisation d'un profilomètre^{2,3}, qui donne une mesure quantitative des rugosités mais, à moins de prendre une grande quantité de lectures, cette mesure quantitative n'est valide que dans une seule direction; l'observation au microscope électronique à balayage^{3,4} qui, à moins d'utiliser une technique stéréoscopique⁵ demandant de longs calculs, ne donne qu'une idée qualitative de la surface; et la mesure de la réflectance d'une surface en lumière visible^{3,6} qui ne fournit qu'une mesure quantitative relative.

L'utilisation d'un rayon laser, dont la réflexion sur la surface à analyser est observée, a été décrite dès 1970⁷. Certains d'auteurs l'ont appliquée à l'analyse de surfaces usées par un abrasif^{8,9}, d'autres à l'analyse de surfaces d'émail¹⁰ ou encore au fini de surface d'un amalgame¹¹.

Cependant, la plupart de ces études ne donnent comme résultat qu'une idée du pourcentage de réflectivité d'une surface, comparée à une surface lisse connue.

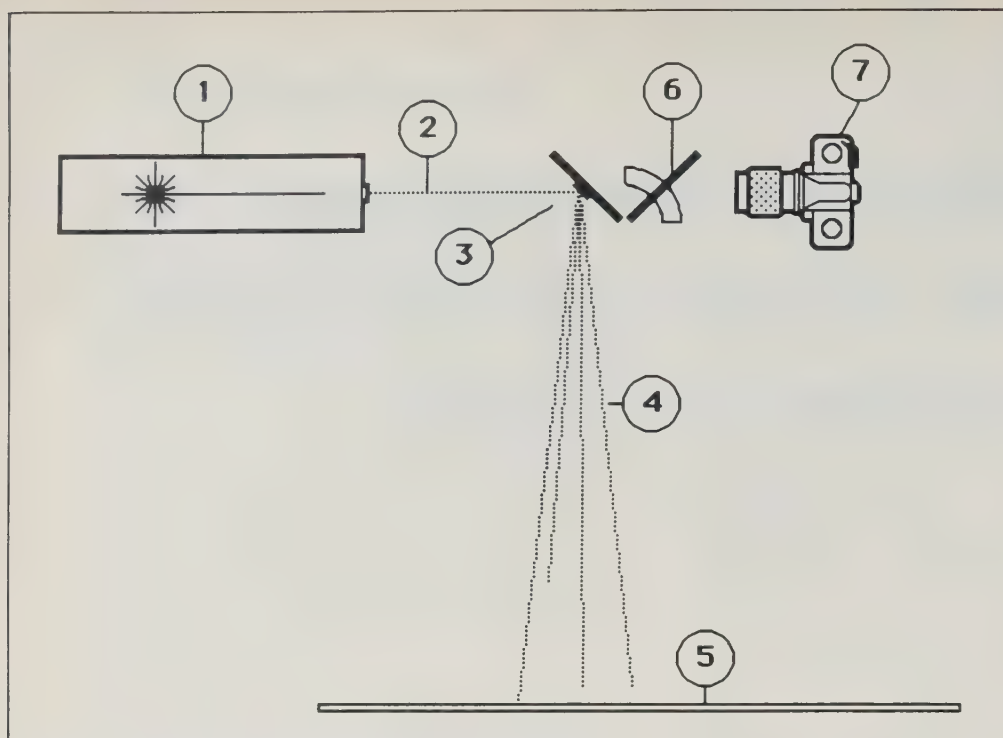


Figure 1 Schéma de montage: 1: Laser He-Ne; 2: Faisceau incident; 3: Échantillon; 4: Faisceau réfléchi; 5: Écran; 6: miroir orientable; 7: Appareil photographique.

L'objectif de la présente étude préliminaire est de déterminer si la technique d'analyse par réflexion d'un rayon laser peut, d'une part être utilisée pour observer qualitativement le fini de surface de résines composites finies avec différents instruments; et, d'autre part, permettre d'explorer l'aspect quantitatif de ces surfaces.

Matériel et méthode

Quatre sortes de résines composites, choisies en raison de leur utilisation courante, ont été utilisées pour fabriquer 48 échantillons. La présente étude n'étant qu'une étude préliminaire, chacun des douze échantillons de chaque sorte de composite a reçu un traitement différent.

Les composites utilisés étaient:

Durafil	(Kulzer) ^α	lot #: Juli 86 022
Silux	(3M) ^β	lot #: P 860616
Multifil	(Kulzer) ^α	lot #: 4.87 021
Herculite XR	(Kerr) ^γ	lot #: 7 1033

Chacun des échantillons a été polymérisé entre deux plaques de verre séparées de 2 mm à l'aide de lames de microscope à l'aide d'une lampe Visilux (3M), pendant 30 secondes à travers la plaque de verre supérieure puis durant 20 secondes supplémentaires en contact direct. Douze

traitements de surface ont été faits avec les instruments suivants:

- 1 Aucun traitement (contrôle)
- 2 Disque Sof-Lex[®] XT Pop-on[™] Médium (3M) à 5 000 min⁻¹.
- 3 Disque Sof-Lex[®] XT Pop-on[™] Fine (3M) à 5 000 min⁻¹.
- 4 Disque Sof-Lex[®] XT Pop-on[™] XFine (3M) à 20 000 min⁻¹.
- 5 Fraise ET 9 huit lames (Brasseler)^δ à 100 000 min⁻¹.
- 6 Fraise ETF 9 seize lames (Brasseler) à 100 000 min⁻¹.
- 7 Fraise 7713 douze lames (Midwest)^ε à 100 000 min⁻¹.
- 8 Fraise 9713 trente lames (Midwest) à 100 000 min⁻¹.
- 9 Fraise 9904 FF quarante lames (Midwest) à 100 000 min⁻¹.
- 10 Fraise T3 douze lames (Midwest) à 100 000 min⁻¹.
- 11 Fraise diamantée ET9 F (Brasseler) à 100 000 min⁻¹.
- 12 Fraise diamantée ET9 EF (Brasseler) à 100 000 min⁻¹.

Chaque traitement a été appliqué sur chacune des quatre sortes de résine composite une seule fois, pendant 20 secondes, avec une pression manuelle similaire à celle utilisée en clinique, par le même

^α Kulzer & Co GmbH, Wehrheim, RFA.

^β 3M, St-Paul, Minnesota, USA.

^γ Kerr Manufacturing Company, Romulus, Michigan, USA.

^δ Brasseler Canada Inc, Montréal, Québec.

^ε Midwest, Des Plaines, Illinois, USA.



Figure 2 Réflexion du faisceau laser; matériau: Durafil; traitement de surface: aucun.

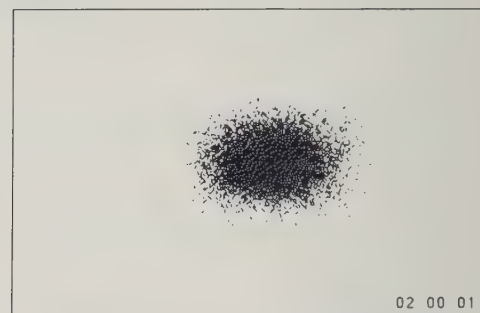


Figure 3 Réflexion du faisceau laser; matériau: Silux; traitement de surface: aucun.

opérateur. Étant donnée la nature préliminaire de cette étude, les différents traitements de surface ont été appliqués tels que mentionnés ci-dessus sans qu'il y ait de séquence similaire à celle utilisée en clinique, comme, par exemple, des disques abrasifs de grains de plus en plus fins. Chaque disque abrasif n'a été utilisé qu'une seule fois alors que les fraises ont été nettoyées après chaque utilisation avec une brosse métallique. Les échantillons ont ensuite été nettoyés à l'air comprimé et conservés individuellement à l'abri de la poussière. Un laser Hélium-Néon de 2 mW de puissance maximale (Photochemical Research Associates Inc., Ontario), émettant un rayon d'environ 1 mm² de section et de longueur d'onde égale à 632,8 nm (rouge) a été utilisé pour illuminer les surfaces avec un angle incident de 45 degrés. Des diapositives (film Fujichrome 100 ASA) ont été prises du faisceau réfléchi sur un écran blanc, dans l'obscurité totale. L'appareil photographique utilisé était un Minolta X-570, muni d'un objectif 100 mm macro, à f3.5, vitesse d'obturation de 4 sec. (Voir figure 1, schéma de montage).

Les 48 diapositives prises ont par la suite été classées par un évaluateur ne connaissant pas les codes utilisés pour les identifier. Le seul critère de classement fourni à l'évaluateur fut la diffusion ou non de l'image du faisceau réfléchi.

Les figures 2 à 13, représentant la réflexion du rayon laser sur les surfaces de composite, ont été obtenues à partir

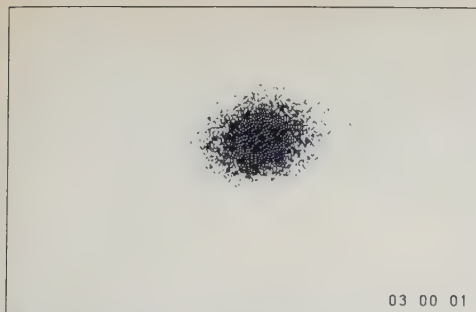


Figure 4 Réflexion du faisceau laser; matériau: Multifil; traitement de surface: aucun.



Figure 5 Réflexion du faisceau laser; matériau: Herculite XR; traitement de surface: aucun.



Figure 6 Réflexion du faisceau laser; matériau: Durafil; traitement de surface: disque Sof-Lex® XT Pop-on™ XFine.

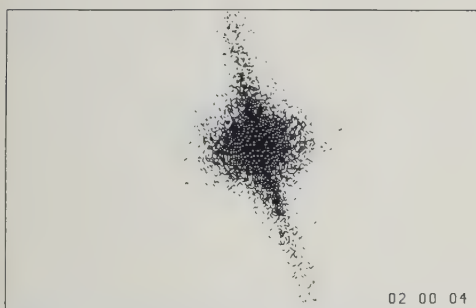


Figure 7 Réflexion du faisceau laser; matériau: Silux; traitement de surface: disque Sof-Lex® XT Pop-on™ XFine.



Figure 8 Réflexion du faisceau laser; matériau: Multifil; traitement de surface: disque Sof-Lex® XT Pop-on™ XFine.



Figure 9 Réflexion du faisceau laser; matériau: Herculite XR; traitement de surface: disque Sof-Lex® XT Pop-on™ XFine.

des diapositives originales par la méthode suivante: photocopie couleur des originaux avec un photocopieur Cannon; digitalisation des photocopies avec un Thunder-scan™ sur micro-ordinateur Macintosh SE; modification uniforme de la luminosité et du contraste (même réglage pour toutes les figures) pour améliorer la visibilité des détails; inversion de l'image (image négative) avec le logiciel FullPaint™ sur le Macintosh SE; et enfin, impression avec une imprimante Laser Apple.

Résultats

Les figures 2 à 5 représentent, pour chacun des matériaux observés, la réflexion du rayon laser sur la surface telle que polymérisée entre les deux plaques de verre. Les figures 6 à 9 représentent les surfaces telles que finies avec les disques Sof-Lex® XT Pop-on™ XFine. Les figures 10 à 13 représentent les surfaces traitées avec la fraise 9713 trente lames. Le tableau I présente, pour chacun des matériaux et pour chacun des traitements, un numéro d'ordre, tel que fourni par l'évaluateur, le nombre "1" représentant l'image où le faisceau réfléchi est le plus concentré et le nombre "29" l'image où le faisceau réfléchi est le plus diffusé. Quelques échantillons ont été cotés de la même note, étant donné leur aspect identique. Le tableau II reprend les mêmes données, classées en ordre numérique.

Discussion

Les figures 2 à 13 représentent des réflexions de faisceaux laser sur des matériaux ayant reçu trois traitements de surface différents et on peut constater qu'elles sont différentes selon les traitements et, dans certains cas, selon les matériaux. Les figures 2 à 5, représentent des surfaces aussi lisses que possible (fini laissé par une plaque de verre) et on peut constater que les faisceaux réfléchis sont assez concentrés. Par contre, les

figures 6 à 9, représentant respectivement les matériaux Durafil, Silux, Multifil et Herculite XR ayant été polis avec des disques à grain très fin font apparaître des différences. Les trois premiers matériaux sont assez semblables mais le quatrième leur est tout à fait différent, le faisceau réfléchi étant plus diffusé. Sur ces quatre figures, l'orientation du grand axe du faisceau diffusé, représenté par une courbe, correspond en fait aux stries laissées par le disque abrasif utilisé: en effet, lorsque un abrasif est utilisé sur un maté-

TABEAU I

Ordre de diffusion croissante du faisceau laser réfléchi pour chaque matériau et chaque traitement de surface

TRAITEMENTS	MATÉRIAUX			
	DURAFIL	SILUX	MULTIFIL	HERCULITE XR
AUCUN	3	4	2	1
Sof-Lex médium	26	26	26	16
Sof-Lex Fine	11	11	10	9
Sof-Lex XFine	7	6	5	12
ET 9	24	25	27	27
ETF 9	21	20	25	15
7713	20	19	24	14
9713	18	19	17	8
9904 FF	22	23	23	28
T 3	13	21	27	23
ET 9 F	29	29	28	28
ET 9 EF	26	26	26	28

TABLEAU II

Classement des matériaux et des traitements selon l'ordre de diffusion croissante du faisceau laser réfléchi

TRAITEMENTS	MATÉRIAUX	NOTE
AUCUN	HERCULITE XR	1
AUCUN	MULTIFIL	2
AUCUN	DURAFIL	3
AUCUN	SILUX	4
Sof-Lex XFine	MULTIFIL	5
Sof-Lex XFine	SILUX	6
Sof-Lex XFine	DURAFIL	7
9713	HERCULITE XR	8
Sof-Lex Fine	HERCULITE XR	9
Sof-Lex Fine	MULTIFIL	10
Sof-Lex Fine	DURAFIL	11
Sof-Lex Fine	SILUX	11
Sof-Lex XFine	HERCULITE XR	12
T 3	DURAFIL	13
7713	HERCULITE XR	14
ETF 9	HERCULITE XR	15
Sof-Lex médium	HERCULITE XR	16
9713	MULTIFIL	17
9713	DURAFIL	18
7713	SILUX	19
9713	SILUX	19
7713	DURAFIL	20
ETF 9	SILUX	20
ETF 9	DURAFIL	21
T 3	SILUX	21
9904 FF	DURAFIL	22
9904 FF	SILUX	23
9904 FF	MULTIFIL	23
T 3	HERCULITE XR	23
ET 9	DURAFIL	24
7713	MULTIFIL	24
ET 9	SILUX	25
ETF 9	MULTIFIL	25
Sof-Lex médium	DURAFIL	26
ET 9 EF	DURAFIL	26
Sof-Lex médium	SILUX	26
ET 9 EF	SILUX	26
Sof-Lex médium	MULTIFIL	26
ET 9 EF	MULTIFIL	26
ET 9	MULTIFIL	27
T 3	MULTIFIL	27
ET 9	HERCULITE XR	27
ET 9 F	MULTIFIL	28
9904 FF	HERCULITE XR	28
ET 9 F	HERCULITE XR	28
ET 9 EF	HERCULITE XR	28
ET 9 F	DURAFIL	29
ET 9 F	SILUX	29

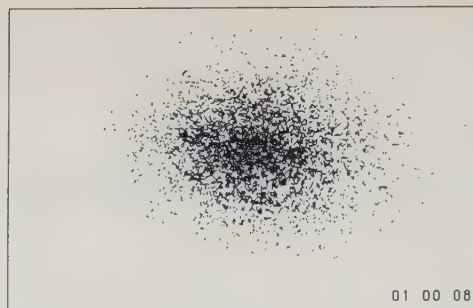


Figure 10 Réflexion du faisceau laser; matériau: Durafil; traitement de surface: fraise au carbure de tungstène #9713.



Figure 12 Réflexion du faisceau laser; matériau: Multifil; traitement de surface: fraise au carbure de tungstène #9713.

riau, il laisse des stries qui sont des rugosités de surface orientées, la surface apparaissant presque lisse dans un sens parallèle aux stries et plus rugueuse dans un sens perpendiculaire. L'image d'un faisceau laser réfléchi par une surface contient donc en elle-même une certaine reproduction de cette surface. De plus, selon les calculs de Crane⁷, la surface totale du faisceau réfléchi et diffusé étant proportionnelle à la surface totale illuminée de l'échantillon, surface comprenant toutes les rugosités, on peut en déduire que plus la dispersion du rayon réfléchi est grande, plus la surface est rugueuse¹². Les figures 10 à 13 représentent encore les mêmes matériaux dans l'ordre mais, cette fois-ci, traités avec une fraise au carbure de tungstène à trente lames. Dans ces cas, le faisceau réfléchi est plus concentré pour le Herculite XR que pour les autres matériaux. Ceci indique un fini de surface plus lisse, ce qui est en accord avec les résultats de Boghosian¹³ qui avait observé qu'une fraise au carbure de tungstène fournissait une meilleure finition au Herculite XR, comparativement au Silux, par exemple.

L'étude des tableaux I et II, bien que ceux-ci ne prétendent nullement avoir une valeur statistique, semble démontrer que les matériaux Durafil, Silux et Multifil présentent des surfaces similaires après l'application de divers traitements. En effet, le comportement des composites à micro-particules hétérogènes (Durafile et Silux) est conforme à l'impression clini-



Figure 11 Réflexion du faisceau laser; matériau: Silux; traitement de surface: fraise au carbure de tungstène #9713.

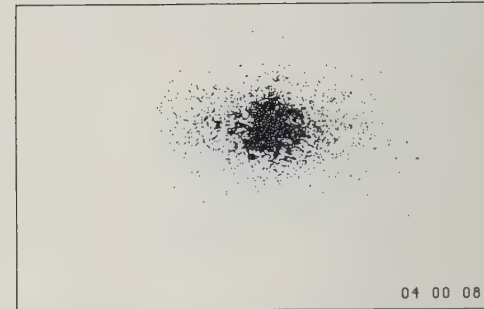


Figure 13 Réflexion du faisceau laser; matériau: Herculite XR; traitement de surface: fraise au carbure de tungstène #9713.

que, de même que celui du Multifil qui, tout en étant un composite hybride avec cependant une très grande quantité de micro-particules, reçoit une meilleure finition avec les disques sablés qu'avec d'autres méthodes. Par contre, le Herculite XR se comporte différemment, étant un composite purement hybride, avec une grosseur moyenne de particules de 0.7 μm et n'ayant pas de complexes pré-polymérisés de micro-particules qui sont arrachés de la surface¹³ par une fraise multi-lames comme c'est le cas pour les trois premiers.

Il est donc évident que la réflexion de faisceaux laser sur des surfaces peut être un bon moyen d'analyse de ces surfaces, tout au moins au point de vue qualitatif. Pour ce qui est de l'aspect quantitatif, on sait déjà que si une surface présente des aspérités de dimensions moyennes supérieures à la longueur d'onde de la lumière qui l'éclaire, elle paraîtra non-polie ou, au mieux, satinée. Inversement, si les aspérités de surface sont de dimensions inférieures à cette longueur d'onde, la surface paraîtra lisse et polie¹⁴. Ce fait a déjà été démontré en lumière blanche (non-cohérente) mais ne permet que de tracer une ligne entre des aspérités de dimensions supérieures à environ 0.8 μm et celles de dimensions inférieures à environ 0.4 μm , ces deux limites étant celles du spectre visible. La lumière laser étant une lumière monochromatique pure (longueur d'onde: 0.6328 μm) et surtout cohérente, il semble que la rugosité d'une sur-

face puisse être mesurée par ce moyen jusqu'à une dimension se traduisant par une fraction de la longueur d'onde¹², ce qui pourrait enfin permettre de quantifier l'effet de diverses techniques et instruments de finition sur divers matériaux.

Conclusion

La présente étude n'étant qu'une étude de "faisabilité", il sera nécessaire, afin d'obtenir des résultats qualitatifs et quantitatifs possédant une réelle valeur statistique, de procéder à des examens de plusieurs échantillons par catégorie et de déterminer, par le calcul, des valeurs moyennes de rugosité de surface pour chacun. De plus, devra être pris en considération le fait que le fini de surface n'est pas nécessairement uniforme dans toutes les directions, fait qui a semblé échapper à l'attention des précédents investigateurs et qui a été observé ici. Les indications fournies par cette étude préliminaire sont en elles-mêmes très prometteuses et permettent déjà d'entrevoir des résultats intéressants. Δ

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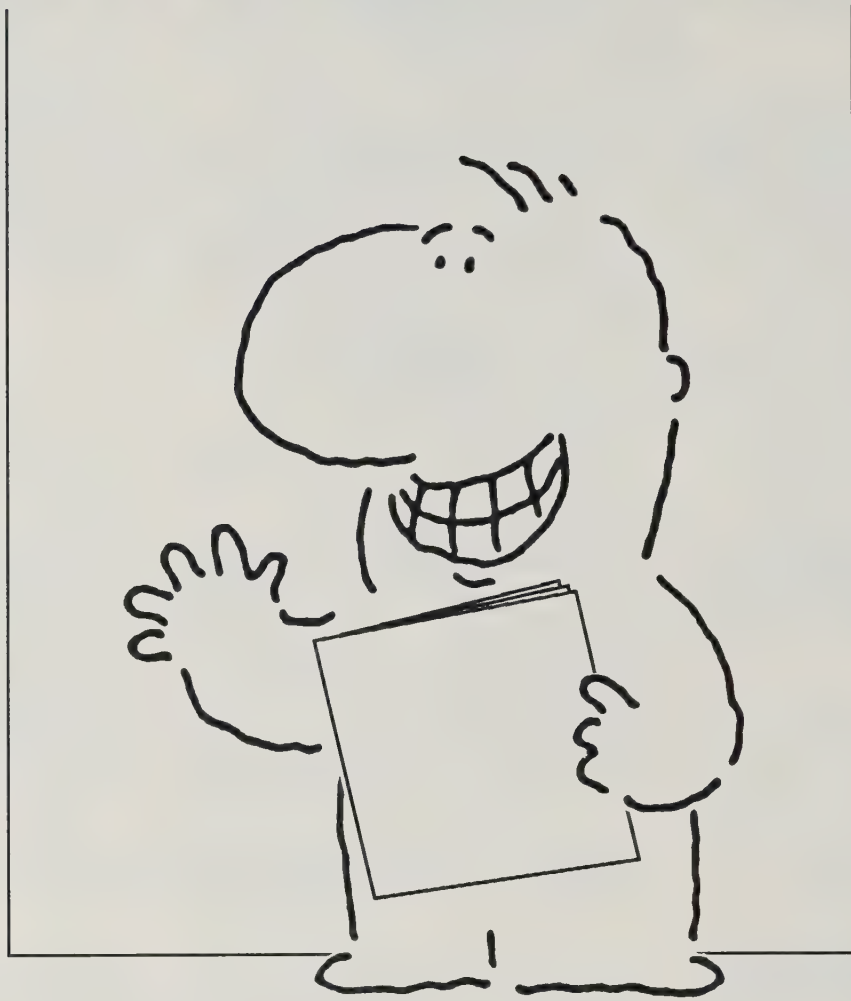
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August 5-10: The World Congress on Health in The Great Hall of the People, Beijing, People's Republic of China. For more information, contact: The World Congress on Health, Dwight D. Eisenhower Bldg, Spokane, WA 99202, USA. (509) 534-0430.

August 9-13: Dental Manufacturers of America, Inc. Contact: Ms. Kathleen A. LeMar, 1118 Land Title Bldg, Philadelphia, PA 19110, USA.

August 10-13: American Academy of Esthetic Dentistry in Pebble Beach, CA. Contact: Ms. Cheryl Kraus, 211 E Chicago Ave, Suite 948, Chicago, ILL 60611, USA.

August 18-20: 5th Annual Symposium, ACOI: Implant Surgery and Prosthodontics in Oakland, California. Information: Margaret M. Jackson, International Congress of Oral Implantologists, PO Box 2277, Grand Central Station, New York, NY 10163, USA. (201) 783-6300.

August 20-24: Ethics, Justice and Commerce in Transplantation: A Global View in Ottawa, Ontario. For more information, please write: Ethics, Justice and Commerce in Transplantation, 2nd fl, 185 Rideau St, Ottawa, Ont K1N 5X8.

August 20-25: 122nd Annual Meeting of the Canadian Medical Association in Quebec City. For more information, contact: CMA Meetings Department, P.O. Box 8650, Ottawa, Ontario, K1G 0G8.

August 21-25: 18th North Queensland Dental Convention in Cairns, Australia. For details, contact: Dr. Peter Martin, Director, 18th North Queensland Dental Convention, PO Box 388, Cairns 4870, Australia.

August 26-30: 25th Class Reunion University of Manitoba Class of '64 in Vancouver during CDA Convention. Contact: Dr. Ken Neuman (604) 736-7371.

August 27-30: Canadian Dental Association Convention in Vancouver, British Columbia. For more information, contact: Convention Coordinator, Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6 Tel: (613) 523-1770.

August 28-30: International Conference on Blood-borne Infections in the Workplace in Stockholm, Sweden. Sponsored by WHO, ILO and NIH (USA). Contact: CONGREX AB, PO Box 5619, S-114 86 Stockholm, Sweden, ATTN: Catharina Oström.

September/Septembre 1989

September: 27th Annual Convention of Iranian Dental Association and 7th International Dental Exhibition in Tehran. Contact: Dr. Ezatollah Khamessi, Iranian Dental Association International Section, PO Box 14155-3695, IR-Tehran 14, Iran.

September 2-8: 77th Annual World Dental Congress, FDI, in Amsterdam, The Netherlands. Congress Secretariat, c/o Organisatie Bureau Amsterdam bv, Europaplein 12, 1078 GZ Amsterdam, The Netherlands. (31) 20-5491212.

September 14-17: Joint CAOMS-CAO Conference at the Hotel Bonaventure in Montreal. Inquiries: Dr. Daniel Forget, 1575 Henri-Bourassa West, Room 410, Montreal, Que H3M 3A9.

September 15-17: A Weekend Retreat for the Professional and their Team in Haliburton, Ontario, sponsored by ODA and CDSPI. For details, contact: The Ontario Dental Association, 234 St George St, Toronto, Ont M5R 2P1. Tel: (416) 922-3900.

September 21-23: 41st Annual New Orleans Dental Conference What's Cookin' in '89. For more information, call or write: Ms. Norma Ward, New Orleans Dental Conference, Suite 119, 3101 W. Napoleon Ave, Metairie, LA 70001, USA. (504) 834-6449.

September 21-23: 28th Annual Meeting and Scientific Session of the Canadian Academy of Prosthodontics in Montreal. Contact: Dr. Alan R. Mills,

Faculty of Dentistry, The University of Western Ontario, London, Ont N6A 5C1.

September 22-24: 25th Annual Session of the Canadian Academy of Endodontics in Montreal. For more information contact: Wayne Acheson, Suite 301, 400 St Mary Ave, Winnipeg, Manitoba R3C 4K5.

September 25-28: New Zealand Dental Association Convention in Napier. Contact: Dr. D.G. Arnott, 30 Munro St, Napier, New Zealand.

September 27-29: European Prosthodontic Association/Sociedad Espanola de Protesis Estomatologica in Barcelona, Spain. Contact: Dr. Juan Salsench, Universidad de Barcelona, Clinica Odontologica, Hospital de Bellvitge, 08907 L'Hospitalet de Lionbregat, Barcelona, Spain.

September 27-30: Annual Meeting and Dental Fair of the Icelandic Dental Association at the Hotel Saga in Iceland. Contact: Mrs. Dagbjartsdottir, PO Box 8596, Sidumuli 35, Iceland. Tel: 34646.

October/Octobre 1989

October 5-8: IX National Dental Congress of Asociacion Odontologica Dominicana in Santo Domingo. Contact: IX Congreso Nacional de Odontologica, Apartado Postal 1002, Santo Domingo, Dominican Republic.

October 5-8: Annual Meeting of the International Association for Orthodontics and the American Orthodontic Society in Montreal. For details, contact: IAO Headquarters, 211 E Chicago Ave, Suite 915, Chicago, IL 60611. (312) 642-2602.

October 11-15: American Academy of Implant Dentistry in Scottsdale. Contact: Mr. John P. Winiewicz, PO Box 2002, Abington, MA 02351, USA.

October 24-27: American College of Prosthodontists in Tuscon. Contact: Ms. Linda Wallenborn, 1777 NE Loop 410, Suite 904, San Antonio, TX 78217, USA.

October 24-27: 3rd International Medical, Hospital and Dental Equipment and Facilities Exhibition in Bangkok, Thailand. Contact: Elsa Wong, SHK International Services Ltd, 22/f National Mutual Centre, 151 Gloucester Rd, Hong Kong, 89587 SHKIS HX.

October 25-28: American Academy of Periodontology in Washington, DC. Contact: Ms. Jean Pierson, 211 Chicago Ave, Suite 1400, Chicago, ILL 60611, USA.

October 27-28: International Congress for Oral Implantologists in New York. Contact: Ms. Margaret Jackson, 248 Lorraine Ave, 3rd floor, Upper Montclair, NJ 07043, USA.

October 27-31: American Institute of Oral Biology in Palm Springs. Contact: Dr. Philip Boyne, Dept of Surgery, School of Dentistry, Room 3306, 24777 University St, Loma Linda, CA 92350, USA.

October 30-November 1: American Academy of Maxillofacial Prosthetics in Tuscon. Contact: Dr. Gregory Parr, MCG/School of Dentistry, Dept of Prosthodontics, August, GA 30912, USA.

October 30-November 3: American Dental Trade Association in Maui, Hawaii. Contact: Mr. Nikolaj Petrovic, ADAT, 4222 King St, Alexandria, VA 22302, USA.

October 30-November 5: International College of Dentists in Honolulu, Hawaii. Contact: Dr. Richard Schaffer, One Metro, 51 Munroe St, Suite 1501, Rockville, MD 20850, USA.

November/Novembre 1989

November 1-3: 52nd Annual Meeting of the American Association of Public Health Dentistry in Honolulu, Hawaii. Contact: AAPHD, National Office, 10619 Jousting Lane, Richmond, VA 23235, USA.

November 3: American Association of Dental Consultants in Honolulu, Hawaii. Contact: Dr. Alan

Helerstein, 919 Deer Park Ave, North Babylon, NY 11703, USA.

November 3: American Endodontic Society in Honolulu, Hawaii. Contact: Dr. Alvin H. Arzin, 2 Learning Lane, Levittown, PA 19054, USA.

November 4-9: American Dental Association Convention in Hawaii. For convention pre-registration and first class group travel arrangements for 10 days, please contact: Dr. Bob Brandon, 85 Lonsdale Dr, London, Ont N6G 1T4. Tel: (519) 657-3368.

November 5-8: American Academy of Dental Radiology Contact: Capt. Tom McDavid, OASD Health Affairs, Pentagon Room 3D372, Washington, DC 20301-1200, USA.

November 8-12: American Society of Dentistry for Children in San Diego, CA. Contact: Ms. Carol A. Teuscher, 211 E Chicago Ave, Suite 1430, Chicago, Ill 60611, USA.

November 15-18: VI Congreso Internacional de Estomatologia y X Congreso Nacional de Odontologia in Lima, Peru. Contact: Dr. Ramon Castillo, President de los Congresos, Alfredo Salazar 583, Of. 102, San Isidro, Lima, Peru.

November 17-20: XX Congreso Asociacion Dental Mexicana Contact: Dr. Yolanda Villarreal de Justus, Ave Ejercito Nal #530 - 5 piso, Polanco, Mexico.

November 21-24: Congrès national de l'Association dentaire française in Paris. Contact: Dr. A. Deyrolle, Palais des Congrès, 92, av de Wagram, 75017 Paris, France. Tel: 42 27 89 00.

November 22-24: Swedish Dental Society Contact: Ms. Charlotte Nackstad, Stockholm International Fairs, Box 5843, 102 48 Stockholm, Sweden. Tel: 0046-8-663 12 50.

November 28-December 1: Osseointegration in Clinical Dentistry: Clinical Training Course Postgraduate Centre of Dentistry, Carl Gustafs vag 34, S21421 Malmö, Sweden.

November 28-December 1: Osseointegration in Clinical Dentistry: Technician Training Course Postgraduate Centre of Dentistry, Carl Gustafs vag 34, S21421 Malmö, Sweden.

November 30: Toronto Academy of Dentistry - 52nd Annual Winter Clinic at the Metro Toronto Convention Centre. For information, contact the Academy of Dentistry at (416) 967-5649.

December/Décembre 1989

December 14-16: The Dental Association of Thailand Contact Col Amnari Dhammajinda, Secretary General, The Dental Association of Thailand, 12 Soi Prasanmitr, Sukhumvit 23, Bangkok 10110, Thailand. Tel: 258-9251.

December 27-30: 44th Indian Dental Conference in Calcutta. For details write: Dr. K.L. Banerjee, Conference Secretariat, Dr. R. Ahmed Dental College & Hospital, 114, Acharya, J.C. Bose Rd, Calcutta - 700 014 India.

January/Janvier 1990

January: 26th International Alpine Dental Conference in Courcheval, France. Contact: L.W. Bryer, 24 Cadogan Sq, London SW1X 0J8, England.

January 20-25: XIV Congresso Paulista de Odontologia, XXVIII Seminario Odontologico Latino-Americano, II Congresso Universitario Paulista de Odontologia in Brazil. Contact: Dr. Joao Vieira de Moraes, President, Associacao Paulista dos Cirurgioes Dentistas, Rue Humaita, 389 - Bela Vista C.P. 2523, CEP 01321 Sao Paulo, Brazil. Tel: 37-4194.

January 24-27: First World Endodontic Congress in Mexico City. Contact: Dr Jose Oynick, Prado Sur 480, Lomas Virreyes, Mexico 11000 DF, Mexico.

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Advertiser's Index

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CDSPI	540, 550
L.D. Caulk Company of Canada	492
Comlite Systems, Inc.	523
Conference Travel of Canada, Inc.	560
Den-Mat Corporation	OBC
Eurodent International of America	IFC
Johnson & Johnson, Inc.	494
Ministry of Health	528
Nobelpharma, Inc.	560
Warner Lambert Canada, Inc.	539

X-ray guidelines must conform with provincial regulations

I was very pleased to see the publication of the Radiation Guidelines for Dental Office, which were developed by the Health Care Council of the Canadian Dental Association, in the CDA Journal.

However the second item of the General Guidelines concerning "Equipment Installation and room design criteria, e.g. with respect to wall insulation, (lead lining or equivalent) must conform with provincial regulations. In the absence of provincial regulations in any particular jurisdiction, the dentist should refer to Health and Welfare Safety Code 22, National Council on Radiation Protection and Measurements, Report 35, or the ADA Recommendations on Radiographic Practices, 1981."

It is unfortunate that these documents predate the findings of Dr. J.C.F. MacDonald and myself, as reported in two refereed papers in Oral Surgery in 1983 and 1984. In these communications, we reported upon the effectiveness of gypsum drywall as a dental radiation barrier, and upon the results of other measurements, relating to the dental radiation protection problem. We conclude that in most cases, lead is not required in the walls of dental operatories.

Using our data, let us take an example. Assume a "Very Busy" x-ray unit — 150 films per week — operating at 70 kVp and producing a radiation exposure at the end of an 8" cone of 360 mR., the maximum exposure allowed by the D.E.N.T. recommendations. At an accessible point on the other side of the wall, at 68" from the focal spot, the exposure is reduced to 5 mR. per film by the effects of distance. If the beam is always pointed at the same wall, in a week the unattenuated exposure at a point on the other side would be 750 mR. We noted, however, that the beam was never directed at the same wall for more than 40 per cent of the time. This reduces the maximum possible weekly exposure to 300 mR. We also found that the patient transmitted at most, 10 per cent of the incident radiation, and that two layers of 5/8" gypsum drywall transmitted only 16 per cent of that incident upon it. The combination of these two factors reduces the transmitted weekly radiation exposure to 4.8 mR., well below the acceptable 10 mR. per week. All this is assuming a most unlikely worst-case situation.

These findings give support to the statements on page 53 of Safety Code 22 regarding the use of common building materials as radiation barriers. It is hoped that government regulators and designers of operatories will take note of these findings, and so save the dentist about \$1,000 per operatory without compromising radiation safety.

In correspondence with both the officials at the Ontario Ministry of Health, and Health and Welfare Canada, they seem to accept our premise that no further shielding is required for a reasonably heavy workload of 150 films per week, if the equipment is functioning properly. Δ

*Dr. John A. Reid,
Chairman, Division of Oral Radiology,
Faculty of Dentistry,
University of Western Ontario,
London, Ontario.*

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1. Drywall construction as a dental radiation Barrier MacDonald, J.C.F., and Reid, J.A., ORAL SURG, 56: No. 3, 319-326, March 1983.
2. Use and workload factors in dental radiation protection design. Reid, J.A. and MacDonald, J.C.F., ORAL SURG. 57, No. 2, 219-224, Feb. 1984.

New X-ray Guidelines: Improved care at lower cost

For the first time ever, the American dental profession has created guidelines that will help all dentists determine the optimal type, number and frequency of radiographs they should take. These guidelines reflect a consensus reached by a panel of practising and academic dentists representing general practices, radiologists, Armed Services and universities, and were developed under the auspices of the American Food and Drug Administration (FDA). The recommendations are not meant to be immutably applied to all patients, but are to be used as a guide and modified when necessary based on clinical judgement.

Designed to increase the efficacy of oral radiography, the guidelines should lead to a significant reduction in the number of radiographs taken. For example, dentists often take posterior bitewing radiographs every 6 to 12 months. For adults at low risk for caries, the new recommendations suggest limiting the frequency of bitewing radiographs to once every 2 to 3 years. A full mouth series has traditionally been taken every 3 to 5 years. In the new guidelines, this series is limited to new patients for whom selective radiographs are deemed insufficient.

Health risk reduction to patients may be the most important benefit of the new guidelines. It is well known that the frequency of health hazards, such as cancer, increase in proportion to the cumulative amount of ionizing radiation that a person receives from all sources. Although there is minimal potential for harmful radiation exposure to patients from dental radiographs, it is still a concern to dentists and the public.

Another important effect of the guidelines will be to reduce the cost of dental care. Of 19 diagnostic radiographic examinations most often performed in the United States, the dental radiographic examination ranked second in frequency of use (chest radiographs ranked first) and in total cost to the public. In the U.S. in 1985, about 100 million dental radiographic procedures were performed at a cost of about US\$1.1 billion. If Canadian dentists have similar patterns of radiographic treatment as their American counterparts, then nation-wide savings resulting from the guidelines could be in the order of \$30 million annually.

In its 1988 *Guidelines for the Control of Radiation in the Dental Office*, the CDA recommends that "every effort be made to minimize the amount of radiation required necessary to diagnose the situation". This should be done by minimizing the number of radiographs required, while obtaining the necessary diagnostic information. Rather than giving specific frequency guidelines (as is done in the FDA guidelines), the Association states that the frequency of radiographic examination "is a matter of clinical judgement".

The FDA guidelines may not be perfect, but they do represent a giant step in the right direction. On the other hand, the CDA guidelines do not go far enough. The CDA should review the FDA guidelines, revise them if necessary and incorporate them into the existing guidelines. Timely adoption followed by active promotion will help Canadian dentists provide more appropriate and higher quality care.

*David M. Kogon, BSc, DDS, MBA
Toronto, Ontario*

Editor's Note: It would appear the radiation guideline information and differences of opinion will continue. An article is presently being prepared at the University of Western Ontario, which will review and critique the U.S. FDA Guidelines referred to in the above Opinion. Watch for it in a future edition of this Journal.

Note: See also page 524 in this edition — "CDA Guidelines for the control of radiation"

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Sources: Bond Strength: Research by Dr. Wayne Barkmeier, Creighton University, Omaha, Nebraska.

Cytotoxicity: *Journal of Dental Research*, volume 68, page 375, article #1546.

Time of Application: A.A.D.R., article #1303, March 15-19, 1989, "An Improved Oxalate Bonding System."

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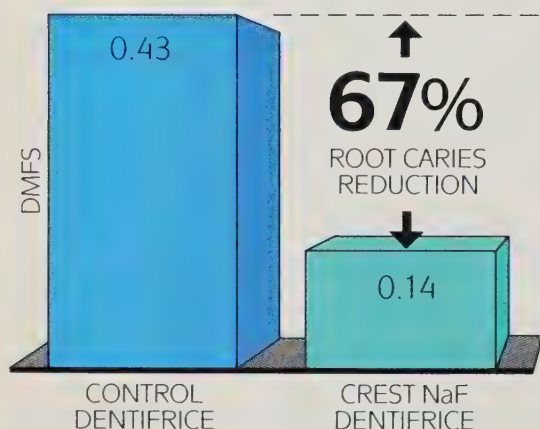
In cooperation with the provincial dental associations and affiliated organizations, CDA offers services, in both official languages, intended to support and advise all areas of dentistry and to represent, protect, promote and develop the interests of the dentist as ethical practitioner, professional, educator, student, researcher, business person, citizen and individual.

CDA recognizes a particular responsibility to contribute to the development of national positions and standards related to dentistry, dental education, dental research, dental equipment, dental materials and dental personnel.

CDA is dedicated to the principle that all Canadians should have the best oral health care it is possible to provide; it actively seeks input from and dialogue with governments, consumers and all those interested in dentistry to enable it to serve more effectively both its members and the Canadian public.



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References: 1. Jensen ME, Kohout F: The effect of a fluoridated dentifrice on root and coronal caries in an older adult population. JADA 1988;117:829-832. 2. 1985 NIDR adult oral survey. Oral Health of United States Adults (1985-1986)



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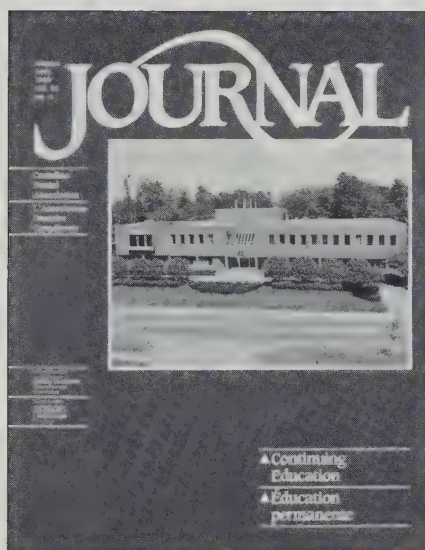
Vol. 55 No. 8

Clinical Features

The current federal budget: How it can affect dentists	623	Ron M. MacKenzie, BComm, CA
First year enrolment of Canadians in North American dental schools	631	Ian C. Bennett, BDS, DDS, MSD Marcia A. Boyd, DDS, MA
To be or not to be: DDS or DMD?	639	P. Ralph Crawford, DMD

Scientific

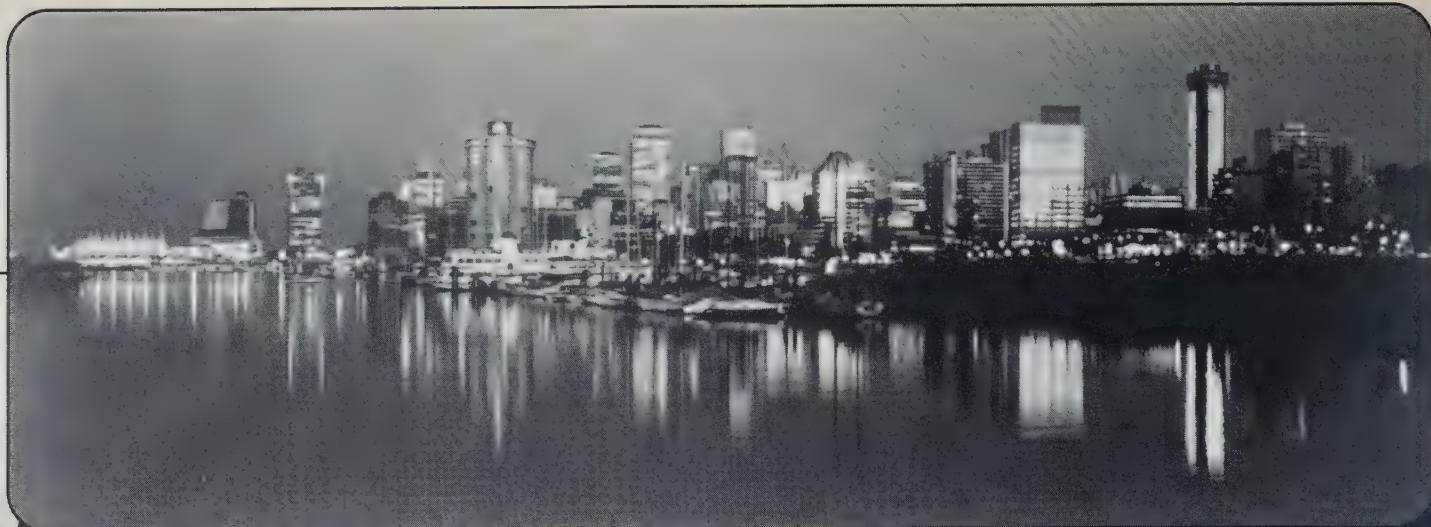
Patient selection criteria for dental radiology	644	Garnet V. Packota, DMD, DipOR, MSc Dean A. Kolbinson, DMD, MSD
Moebius and Poland Syndrome: A report of a case	647	Lorne D. Koroluk, DMD, MSD, MRCD(c) Dennis T. Lanigan, DMD, MD
Dental radiology asepsis survey	651	J.S. Hubar, BSc, DMD, MSc



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Departments

583	Editorial "I still learn"
584	President's Column "Looking back"
585	News Update
596	CDA RSPs
596	Obituaries
600	Brieflies
605	Library/Resource Centre
607	Book Reviews
610	Letters to the Editor
612	The Dental Laboratory and You
615	CONTINUING EDUCATION
626	The Bereaved Dentist
654	Announcements
657	Marketplace
659	Advertisers' Index
662	It's My Opinion



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“I Still Learn”

Michelangelo at the age of 90 and almost completely blind was observed in the courtyard of St. Peter's Basilica in Rome, running his hands over statues. When questioned as to his strange behaviour he proclaimed, “I still learn”. Oh that it was so in our world of today; that every dentist would have an inner compulsive desire to be forever the student. A wide mind once advocated that dentists should have a sign in every operator, fully visible to patients, displaying a message similar to Michelangelo's, “I Am Still Learning.”

On pages 615 to 619 of this edition of the Journal there are listed 51 different continuing education courses in 13 separate locations. One enterprising Canadian dentist diligently kept for a full year a file for every piece of mail sent to the office that pertained to continuing education. The accumulation amounted to 141 separate “invitations”. The top four topics claimed 55 per cent of the total with orthodontics at 24 courses, practice management 23, implants 16 and esthetic dentistry 15. Can it be properly stated that the most popular courses were the ones “where the money was”? The remaining 63 courses were divided between 13 different subjects. There was only one course in ethics.

Nor is the situation much different in the United States. A recent issue of the Journal of the American Dental Association listed 1226 available continuing education courses in 21 different disciplines. The most numerous was practice management with 164 courses. Interestingly, many of the practice management titles contained enticing words such as, “increased income, financial planning, dynamics, value, taxes, or insurance”.

A very well attended two day continuing education course was held a couple of years ago when the basic message was “the million dollar dental practice” — dentists were encouraged to work 1000 hours per year at a \$1000.00 per hour! It was noted at this course the leader for the two day event firmly believed in what he preached. He charged \$US10,000 for his ten-hour lecture.

Never in the history of dentistry has continuing education been more prominent. We are to be applauded. But it is time for all dentistry to look deeply into the whole area (arena). Perhaps we need new direction. Numerous questions need to be resolved — and soon.

At the outset there is a “give-in”. There **must** be continuing education. There is surely no argument the dentist must “forever be the student”. But what of control? What of emphasis?

To what extent should dentistry be influenced by commercial enterprises. Dental journals are seldom opened these days without a course being offered by those who sell products. There are too many instances of blatant self interest.

And what of the worth of a clinician? A group of dentists at a recent annual meeting were told a certain Doctor “X” **demand**ed \$US7,500. (plus first class expenses) for a one day lecture. And \$US10,000 is not an unheard of amount. There are many, many dentists who will never net that much. At what point will the profession refuse to treat clinicians, most of them dentists, like movie star/sports hero celebrities for the privilege of enhancing our ability to care for our patients?

Should continuing education be mandatory? Today four out of ten provinces have legislated for the compulsory route but the “pro versus con” discussion continues in every jurisdiction. Does forcing some dentists to accumulate so many credit hours do nothing more than attest to a physical presence at a meeting? Can dentists be legislated to learn? Surely 150 hours every five years (Alberta), 125 hours every three years (Manitoba) or 90 hours every three years (British Columbia) is not an onerous task.

No study has ever shown mandatory continuing education made better dentists. What it often does though is create an opportunity for more dentists to afford those “big name clinicians” at more continuing education programs. It is also an opportunity for organized dentistry to inform the public, “See, we are responsible. We are striving to keep our members up-to-date!”.

Elsewhere in this Journal issue will be found the report and recommendations of the “1988 CDA Teaching Conference on Continuing Dental Education”. Those who conceived and organized this timely conference are to be commended. The entire dental community is urged to review this report and to particularly pay heed to the warning found within its last paragraph. . . .

“ . . . the field of continuing dental education is like an orphan or second class citizen; the cause is worthy but funding, recognition and support are not often as forthcoming as they can be for other areas of academic and professional endeavour”.

P. Ralph Crawford, DMD

Editor: Journal of the Canadian Dental Association

Looking back

My year in the presidency is rapidly coming to a close. It is time to reflect and assess the events of the past 12 months.

The year has been both exciting and busy. Busy in the fact that the President's time is always at a premium because of the many dental events, as they occur, throughout Canada. Although it would be a special pleasure to attend all of these dental functions across this country, both the time limitations and financial implications make this impossible. However, the Canadian Dental Association's policy of Executive Council representation will continue where possible, to accommodate upcoming dental events.

One of the most memorable and important events of the year was undoubtedly, the re-tendering of the Canadian Dental Insurance Plans. Although the decision was difficult, dentistry was able to persuade the present insurance carrier to discard its capitation component. Although some major decisions remain to be completed, these will be pursued to a successful conclusion.

Another major event was the formation of an electronic data interface system, supported by nine provincial dental corporations. This facility will bring the dental office in this country into the computer age, as well as having the potential to provide many other electronic data functions.

The past year also saw the formation of a Communications Strategy (for the foreseeable future) for the Canadian Dental Association, ensuring that all aspects of communication from within and outside the organization, will be enhanced and made as effective as possible.

Improvements were made to the manner in which the education and accreditation programs are structured. Also, autonomy for the accreditation process was achieved.

Certainly a positive change within the CDA has been made regarding conventions. The CDA Convention in Vancouver in August gives every indication of being the most successful ever. Convention planning demands a great deal of time and effort on the part of many people contributing their talent and energy. All of this is necessary to continue to ensure that this aspect of combined education and social interaction is a success.

On the down side, some areas of concern remain. An indication of declining membership in the two voluntary provinces carries financial implications which threaten to curtail valuable programs the CDA has undertaken or would like to pursue in the future. Possible fragmentation of the liability insurance programs offered to Canadian dentists threatens to weaken the very existence of the plans. Occasionally criticism by some dental organizations that not enough information is being provided, leads me to say that communication is a two-way street and the Canadian Dental Association is working full out, on your behalf.

The incoming President, Dr. Kevin Roach, his newly created management team, and new members who will sit on the Executive Council will most certainly continue to work on your behalf and in this way maintain and enhance the stature of the dental profession in the eyes of the Canadian public.

Finally, I wish to thank all those who helped me to succeed along the way, so that I was able to do my part to keep our national dental organization working in the best interests of all.

Au revoir!

*Jack W. Niedermayer, BA, DDS,
President of the Canadian Dental Association.*



Dental Education in Canada: A Bargain?

By Rebecca Dufton, BA (Hons.)*

Students interested in pursuing a career in dentistry should be prepared to pay relatively high education costs. The latest Statistics Canada figures indicate that tuition fees for 1988-89 undergraduate programs at most Canadian universities increased by four to eight per cent over the previous year. And dentistry is among the most expensive programs of study, because of the high cost of clinical facilities, laboratory requirements and dental materials. This raises the perennial debate that dental degrees are becoming beyond the reach of ordinary Canadians. Is dental education only for children of the very rich?

An examination of typical tuition fees and education-related expenses from last year indicates that the total cost of four years at one of Canada's ten dental faculties ranges from \$13,000 to \$19,000. These figures include basic items such as books, student fees, the purchase or rental of dental instruments and laboratory fees. Living expenses are not included in these totals. Can we conclude that these figures are extravagantly high? Unreasonable?

In fact, dental education in Canada is a bargain. According to information from the Association of Universities and Colleges of Canada, the actual cost of four years of study is far more than the price of tuition. Depending on the province, the Canadian taxpayer subsidizes between 80 and 91 per cent of the real education cost (see Figure 1). Quebec universities offer the best education value around, with dental students paying between eight and 12 per cent of the real education cost. Without these subsidies, students would pay close to \$100,000 to obtain the same degree. Indeed, few Canadians would be able to afford *any* university education, were it not for support from provincial taxpayers. It brings into question whether a university education should be considered a right or a privilege.

Canadian students fortunate

To demonstrate just how fortunate Canadian dental students are, it is useful to

FIGURE 1

Dental Education Costs in Canada

SCHOOL	TUITION 4 years	EXPENSES* 4 years	TOTAL COST 4 years	**	ENROLMENT to number of applicants (in brackets) entering 1986-87
U. of British Col.	\$9,520	\$ 7,041	\$16,561	18.3%	40 (266)
U. of Alberta	\$5,464	\$10,461	\$15,925	11.8%	50 (363)
U. of Saskatchewan	\$7,500	\$ 8,100	\$15,600	13.8%	21 (74)
U. of Manitoba	\$7,180	\$11,756	\$18,936	13.7%	26 (141)
U. of Western Ont.	\$6,432	\$11,107	\$17,539	20.0%	40 (529)
U. of Toronto	\$6,428	\$ 8,752	\$15,180	19.1%	104 (917)
Université Laval	\$2,800	\$ 9,900	\$12,700	8.4%	48 (408)
McGill University	\$2,280	\$10,701	\$12,981	12.3%	40 (412)
Dalhousie	\$7,592	\$ 9,612	\$17,204	18.2%	40 (214)

* Figures listed above represent actual charges for 1986-1987. Typical expenses include books, student fees, purchase/rental of equipment, other supplies and materials and laboratory fees. These are the minimum costs for students entering dental programs, and are subject to change without notice. These figures do not include living expenses.
Source: Admission Requirements of US and Canadian Dental Schools: 1988-1989. American Association of Dental Schools. Washington, D.C.

** Percentage of cost covered by tuition.
Source: The Directory of Canadian Universities 1988-1989. The Association of Universities and Colleges of Canada. Ottawa, Ontario.

examine our American counterparts. In the United States there are 57 dental schools. They may be state-funded, private or a combination of the two. Tuition fees vary dramatically, depending on the school's level of government funding. Using figures from Admission Requirements of U.S. and Canadian Dental Schools 1988-89, (Figure 2), compares dental programs within the same state on the basis of price alone. For example, in California, a state-funded program costs (in U.S. dollars) between \$16,000 and \$20,000 over four years in tuition and expenses for residents (and between \$26,000 and \$36,000 for non-residents), while a private school costs between \$70,000 and \$90,000 for residents and non-residents alike. In New York, a state-funded university program would cost approximately \$29,000, while a private

school counterpart would cost between \$66,500 and \$80,000. Surprisingly, competition for places in "priced" American private schools is fierce — at \$80,000 for four years, Pacific University attracted 661 applicants for 103 openings this year.

Private schools in the United States are operated like a business — with an emphasis on profit and the bottom line. Indeed, for the first time in history, four American dental faculties are closing their doors. Georgetown, Oral Roberts, Fairleigh Dickenson and Emory University are phasing out their dental programs; accepting no new classes. Canadian schools, on the other hand, struggle along from year to year with shrinking budgets in an effort to provide affordable education for all. Should dental education continue to be accessible to all Canadians

FIGURE 2

Dental Education Costs in the United States

School public/ private		Tuition Resident (four years)	Tuition Non-Res. (four years)	Expenses**	Enrollment to number of applicants (in brackets)
Alabama	(pub.)	\$11,196	\$15,996	\$ 9,810	53 (105)
Calif. (L.A.)	(pub.)	\$ 6,100	\$22,448	\$14,276	88 (572)
Calif. (San Fr.)	(pub.)	\$ 5,100	\$15,264	\$11,133	88 (401)
Loma Linda	(priv.)	\$59,700	\$59,700	\$10,197	67 (485)
Pacific	(priv.)	\$80,100	\$80,100	\$11,380	122 (661)
S. California	(priv.)	\$64,196	\$64,196	\$12,653	120 (977)
Colorado	(pub.)	\$20,736	\$62,208	\$ 8,293	35 (357)
Connecticut	(pub.)	\$17,200	\$38,800	\$12,545	40 (445)
Howard (D.C.)	(priv.)	\$20,400	\$20,400	\$10,478	84 (693)
Florida	(pub.)	\$14,736	\$35,184	\$ 9,470	75 (429)
Georgia	(pub.)	\$13,962	\$41,874	\$12,920	53 (103)
Illinois	(pub.)	\$14,512	\$37,400	\$13,589	134 (499)
Loyola	(state-priv.)	\$47,400	\$47,400	\$ 9,241	76 (937)
Northwestern	(priv.)	\$62,482	\$62,482	\$ 8,260	104 (960)
S. Illinois	(pub.)	\$ 8,232	\$24,696	\$ 7,364	48 (264)
Indiana	(pub.)	\$16,800	\$35,200	\$ 7,710	87 (391)
Iowa	(pub.)	\$14,200	\$37,792	\$ 8,421	69 (468)
Kentucky	(pub.)	\$14,472	\$54,792	\$ 7,592	53 (448)
Louisville	(pub.)	\$14,160	\$54,480	\$ 8,248	65 (312)
Boston	(priv.)	\$72,800	\$72,800	\$11,447	46 (1124)
Maryland	(pub.)	\$19,032	\$43,664	\$ 9,442	91 (701)
Louisiana	(state-pub.)	\$12,800	\$31,200	\$13,666	57 (117)
Harvard	(priv.)	\$74,250	\$74,250	\$13,669	23 (237)
Tufts	(priv.)	\$65,400	\$65,400	\$12,390	127 (884)
Detroit	(pub.-priv.)	\$42,000	\$42,000	\$ 7,996	55 (282)
Michigan	(pub.)	\$25,016	\$46,856	\$ 8,433	98 (503)
Minnesota	(pub.)	\$20,954	\$31,429	\$ 6,907	104 (438)
Mississippi	(pub.)	\$16,000	\$40,000	\$ 4,980	25 (71)
Missouri	(pub.)	\$23,761	\$37,686	\$ 6,951	104 (440)
Washington	(priv.)	\$66,600	\$66,600	\$10,832	50 (644)
Creighton (Nb.)	(priv.)	\$45,976	\$45,976	\$ 6,060	75 (622)
Nebraska	(pub.)	\$15,151	\$33,360	\$10,783	56 (340)
Fairleigh Dick.	(priv.)	\$55,760	\$61,760	\$ 9,446	75 (714)
New Jersey	(pub.)	\$32,000	\$42,000	\$ 6,140	77 (541)
Columbia N.Y.	(priv.)	\$56,328	\$56,328	\$10,228	70 (645)
New York	(priv.)	\$65,864	\$65,864	\$14,350	158 (850)
Buffalo	(priv.)	\$22,620	\$33,200	\$ 6,555	82 (339)
Stoneybrook N.Y.	(pub.)	\$22,200	\$33,200	\$ 6,883	28 (394)
N. Carolina	(pub.)	\$ 8,439	\$28,400	\$ 9,868	77 (551)
Case Western Oh.	(priv.)	\$58,000	\$58,000	\$ 9,364	83 (708)
Ohio State	(pub.)	\$15,092	\$36,064	\$ 7,810	123 (651)
Oklahoma	(publ.)	\$11,568	\$28,164	\$11,171	54 (312)
Oregon	(pub.)	\$12,216	\$28,980	\$10,707	63 (164)
Pennsylvania	(priv.)	\$66,970	\$66,970	\$14,612	90 (729)
Pittsburgh	(priv.-state)	\$43,600	\$65,800	\$ 7,285	95 (525)
Temple	(priv.-state)	\$36,768	\$59,352	\$ 8,690	103 (1037)
S. Carolina	(pub.)	\$12,325	\$24,650	\$ 5,295	49 (116)
Meharry	(priv.-non-profit)	\$42,000	\$42,000	\$11,958	35 (438)
Tennessee	(pub.)	\$14,052	\$26,640	\$10,746	88 (200)
Baylor	(priv. non-profit)	\$17,033	\$68,132	\$10,590	98 (341)
Houston	(pub.)	\$15,022	\$60,088	\$10,360	93 (412)
San Antonio	(pub.)	\$15,022	\$60,088	\$ 9,318	93 (412)
Virginia	(pub.)	\$18,800	\$38,000	\$ 8,210	92 (540)
Washington	(pub.)	\$17,504	\$44,450	\$30,262	50 (373)
W. Virginia	(pub.)	\$10,360	\$23,185	\$ 9,390	39 (305)
Marquette Wisc.	(private)	\$63,960	\$63,960	\$ 9,930	100 (959)
Puerto Rico	(pub.)	\$10,000	variable	\$ 9,520	60 (188)

* Figures listed above represent 1986-1987 actual charges.

** Typical expenses include books, student fees, purchase/rental of instruments, other supplies and materials, and laboratory fees. These are the minimum estimates of costs for students entering dental programs, and do not include living expenses.

Source: Admission Requirements of US and Canadian Dental Schools: 1988-1989. American Association of Dental Schools. Washington, D.C.

— at the taxpayer's expense — or should tuition fees be raised significantly to reflect the real costs?

If tuition fees are raised, concern will be voiced that dental education is being restricted to the privileged few who can afford it. This is a simplistic conclusion, however, that warrants challenge. Assuming that a system of awards and bursaries is in place to help equalize opportunities for underprivileged applicants, the real question is whether or not it is reasonable to view tuition fees as an investment on future return. Many candidates appear willing to make financial sacrifices now to gain entry to a profession with promising future economic potential.

Canadians in U.S. schools

At some American universities, the ratio of applicant to opening is as low as 1:1. Since the number of applicants for American dental programs is declining, there is more incentive for American schools to accept Canadian students. Currently, close to 100 Canadian students, for whatever reason, are willing to pay the non-resident tuition fee at an American university — in some cases, paying as much as four times the cost of a four-year undergraduate program at a Canadian university.

Furthermore, in an effort to contain the current oversupply of dentists, Canadian universities are reducing the number of undergraduate positions in dental schools by approximately 10 per cent per year. The combination of these two factors may be the motivation for Canadians to study south of the border. What are the ramifications of Canadians studying dentistry abroad?

Like American dentists who wish to practise in Canada, Canadians who study in the U.S. at non-CDA-accredited universities are required to write the comprehensive three-part National Dental Examining Board examination. Currently, the exam is held annually in Montreal and Vancouver. Beyond the actual cost of the full examination (\$4,080 in 1989), applicants have to provide their own patients and pay their own travel-related expenses. Canadians who study in Canada pay only \$400 for the NDEB certificate upon graduation. In addition to the higher education costs, Canadians who study dentistry abroad must compete with immigrants to obtain certification to practise in their own country.

Canadian schools are much more competitive, with ratios ranging from 3:1 (University of Saskatchewan) to 9:1 (University of Toronto). This brings the potential for Canadian schools to attract a higher quality of incoming students, and graduate a higher quality professional.

According to Dr. Kenneth Zakariasen, Dean of the Faculty of Dentistry at Dalhousie University, "A graduate of any Canadian school has the same level of training. There is little variation in the average DAT scores of students accepted into Canadian programs. Although the United States has a wider spectrum of university programs — some private schools have funding for extensive research — there is more variation in the quality standards."

In this light, a Canadian dental education is both a bargain and a more reliable investment. It is interesting to note that Dr. Zakariasen is an American who received his dental education in the United States.

Real bargain for postgraduates

For post-graduate studies, Canadian universities present an even greater bargain. Dr. Richard Ten Cate, former Dean of the Faculty of Dentistry at University of Toronto says, "It's the best deal under the sun. Post-graduate students are the people who can best afford the tuition, and these programs are subsidized even more (than undergraduate programs). Also, Canadian schools have the best staff to student ratios."

"Canadian schools produce a high-quality product," agrees Dr. Ralph Brooke, Dean of the Faculty of Dentistry at the University of Western Ontario. "Our schools are as good as any in the United States. In fact, some American schools are not as good as ours."

"Canadian schools attract a higher quality of incoming students and graduate schools have a healthy supply of applicants," adds Dr. Brooke.

It seems clear that dental students in Canada are fortunate to have top-quality education at a reasonable cost. Nonetheless, come September, the usual complaints about high tuition costs will be heard at campuses across the country. It would be a good idea to keep this information handy for the next time you hear dental students complaining about the high cost of education in Canada. Tell them just how lucky they are. △

* Ms. Dufton is a writer at CDA Headquarters in Ottawa.

Dr. L.D. Pankey dies in 88th year



Dr. L.D. Pankey

Dr. L.D. Pankey, called the "Father of modern Dental Practice Administration" by the American Academy of Dental Practice Administration, died in the spring at his home in Florida. He was 87.

A graduate of the University of Louisville (Kentucky) dental school in 1924, Dr. Pankey went on to gain international stature in his more than 60 years as a lecturer, educator and philosopher.

He was regarded throughout the international dental community as "one of the giants in continuing dental education, high standards, quality and ethics."

Early commitment

Shortly after his graduation, Dr. Pankey made a commitment to learn as much as possible about what a dentist could do to help patients retain their teeth for a lifetime — "with comfort, function, health and esthetics." About the same time, his philosophical concepts for the profession of dentistry, began to develop.

He defined professionalism as "that quality of conduct which accompanies the use of superior knowledge, skill and judgement toward the benefit of another person or society, prior to any consideration of self-interest".

He stressed making "a life as well as a living" in dentistry. If a dentist's practice was patient-centred and his other priorities were also in order, the dentist's career should result in happiness, Dr. Pankey often advised in his lectures.

The Pankey Institute

The L.D. Pankey Institute for Advanced Dental Education was created in his honor in 1969, after Dr. Pankey had retired from teaching.

It is estimated that at least 12,000 dentists and other dental personnel from the United States and 32 other countries had attended Dr. Pankey's lectures. The Institute itself has served an estimated two million patients.

The Institute was intended to be a memorial of significance in view of the inspiration projected by Dr. Pankey during his lifetime.

The experience at the original facility in Miami (now quartered in Key West, Florida) was described by a writer in the Florida Dental Journal as "a matter of being rejuvenated spiritually, psychologically and professionally. It works so well that, almost without fail, it gives participants a new lease on life — all aspects of life".

A dental examiner

Dr. Pankey was very active in his community, his church and numerous professional organizations. He served on the Florida State Board of Dental Examiners for 12 years.

Dr. Pankey's wife was the daughter of a dentist and his son is practising as an orthodontist. △

Did you know?

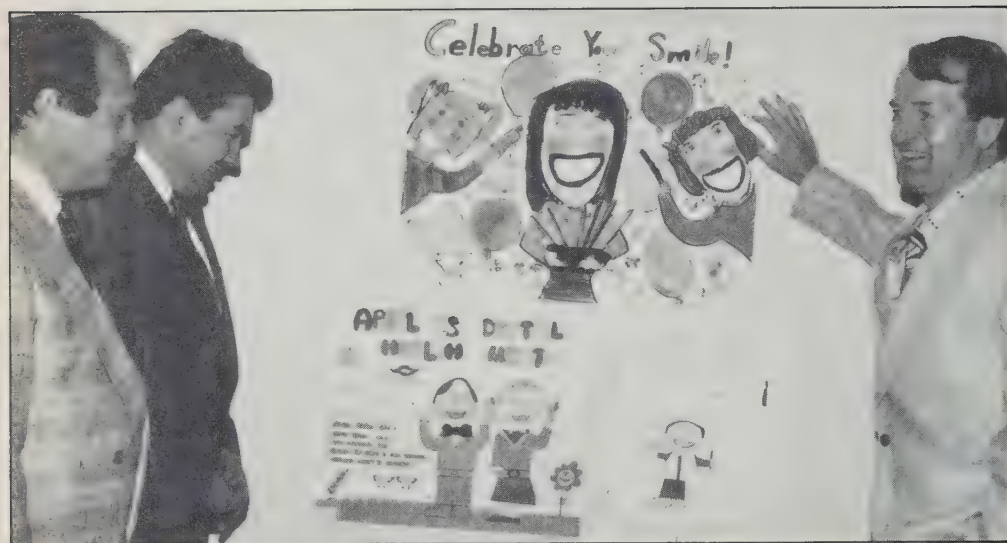
SOMETHING YOU WOULD NEVER BELIEVE!!
"STUDENTS FIGHT FOR THE RIGHT TO CHEAT"

Nearly 70 people were injured when Bangladeshi students, demanding the right to cheat during college final examination, fought teachers and police with stones and home-made bombs, police said yesterday.

Students say they must cheat to compete with colleagues who get help from powerful relatives and others who are able to buy copies of tests from unscrupulous examination officials.

(From the Otago Daily Times [New Zealand] June 11, 1988)

Executive Council names Dental Health Month poster winners



CDA Executive Council members (from the left) Dr. Les Allen of Winnipeg, CDA Vice-President, Dr. Gilles Dubé, Lachute, Québec, and President-elect Dr. Kevin Roach admire the national level prize winning Dental Health Month posters at CDA headquarters. The spectacular creation at the top, was by Anne-Marie Huizing, of Calgary, Alberta. Bottom left was Category C winner, by Bethany Croken, of Kensington, P.E.I. Bottom right is national winner in Category A, created by Aron Croken, also of Kensington, P.E.I.

(JCDA PHOTO BY C. METCALFE)

There's Nothing New in Dentistry!

Did you ever wonder if there was a simple solution to solving the dilemma of submitting radiographs to an insurance company without letting the originals out of your sight? Or sending a *copy* of a radiograph to a colleague in another city, or country quickly and efficiently without jeopardizing the patient's file? Well you're 60 years too late! An article in "Dental Radiography and Photography", April 1, 1929, outlined "this special service is available commercially"

In the mid-1920's Western Union, utilizing a very complicated array of photo-electric cells and sensitized film, apparently was able to accomplish radiograph transfer in a fashion very little different from today's. Despite the Faxphone and Xeroradiography the dilemma remains — there is no perfect system. Do we wait another 60 years? Δ

J.S. Hubar, BSc, DMD, MSc.
(School Dental Medicine)
Pittsburgh, Penn.

SEE OPPOSITE
Page from "Dental Radiography and Photography", April 1, 1929

Members of the Canadian Dental Association's Executive Council recently judged a wide array of colorful and ingenious National Dental Health Month posters from Canadian school children who had already placed first in their category in their respective provinces.

The national winners are:

In Category A (Kindergarten and Grade 1): Aron Croken, 7, a Grade 1 pupil in Queen Elizabeth Elementary School, Kensington Prince Edward Island.

In Category B: (Grades 2 to 4): Anne-Marie Huizing, a Grade 3 pupil in Ecole Holy Name, Calgary, Alberta.

In Category C: (Grades 5 to 7): Bethany Croken, 10, a Grade 5 pupil in the Queen Elizabeth Elementary School, Kensington, Prince Edward Island.

Finalists' work from six provinces had been submitted as entries for the national prizes in the three categories.

Participants had been asked to illustrate the theme "Celebration of the Smile". Judging was done on the basis of originality, artwork and penmanship.

The national winners received a "Bob/Keep Smiling" T shirt for every pupil in their home room class and a framed certificate for their school. Δ

Did you know?

IT'S TOUGH TO QUIT SMOKING!!

E.M. Brecher in "Notes & Illicit Drugs" states, "No country that has ever learned to use tobacco has given up the practice." And some of the sanctions have been worse than you might imagine. . . .

**In Constantinople, 1633, Sultan Murad IV had smokers beheaded. Or drawn and quartered. Soldiers caught smoking had their hands and feet crushed and were left helpless between the line.

**One Romanoff czar was somewhat milder. He merely had smokers' nostrils slit.

**In feudal Japan, smokers were subject to fines, imprisonment or confiscation of property.

**A papal ban in the 17th century forbade clergy from smoking. Pope Benedict XII repealed the ban years later . . . "to avoid the scandalous spectacle of dignitaries of the church hastening out in order to take a few clandestine whiffs. . ."

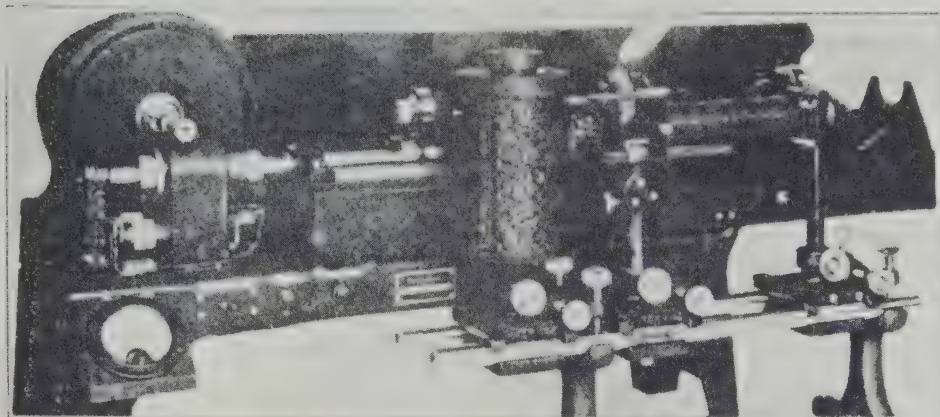
**Around the turn of the century America began mass-producing milder, paper-wrapped cigarettes which became popular among women and the youth. Indicating concern, by 1921 14 American states banned cigarettes entirely. As with all attempts to curtail the habit, smokers ignored the restrictions and went on smoking. By 1927 all restrictions were repealed.

**Thomas Edison vowed to "employ no person who smokes cigarettes".

**The Canadian Dental Association announced its headquarters at 1815 Alta Vista Drive in Ottawa would be "smoke free" on January 1, 1987.

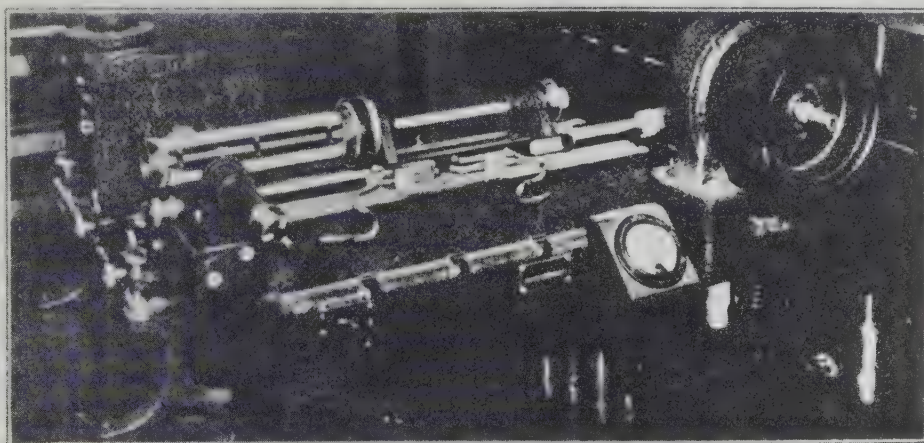
DENTAL RADIOGRAPHY AND PHOTOGRAPHY

Sending Dental X-rays by Telegraph



Below: Telephotograph receiving apparatus. Electrical impulses from the transmitting machine operate a light valve controlling a beam of light. This plays upon a sensitized film winding past it on a cylinder, reproducing upon it the lights and shadows of the film in the transmitting machine.

Above: Telephotograph transmitting apparatus. A photographic lens pictures the subject matter, revolves on a cylinder past a light ray. This, shining through it upon a photo-electric cell, translates the image light and dark values into electrical impulses.



THROUGH the courtesy of the Western Union Telegraph Company we publish two dental radiographs transmitted by telegraph, and photographs of the simple-appearing but most ingenious

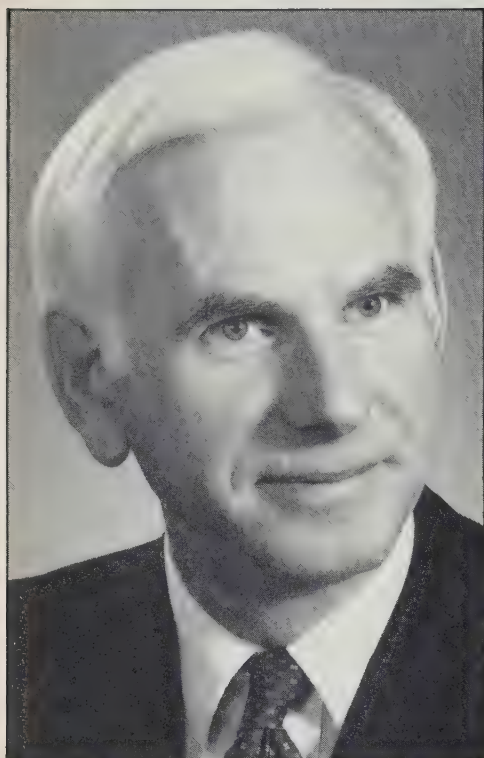
machines which make this modern wonder possible. Even the filled root canals show up well. This special service is available commercially if you should want to consult with a distant dentist.



Natural-size reproductions of dental telephotographs as sent by the process described above. While much detail, present in the originals, is lost in our reproductions, still more diagnostic details may be seen.



Dr. Mac Balfour named ODA President



Dr. R. Mac Balfour

Dr. R. Mac Balfour of Oakville, Ontario was installed as the 123rd President of the Ontario Dental Association (ODA) at that body's spring Board of Governors meeting in Toronto.

Dr. Balfour has also been serving as a member of the Board of Governors of the Canadian Dental Association.

The ODA's Past-president is Dr. William A. Glave of Aurora, Ontario.

Dr. David Somer of Hamilton was elected Vice-President for the 1989-90 term.



Dr. J.H. (Jack) Gryfe

Drs. Rick Bossin of Hamilton-Peel, Roger Howard of Ottawa and Cam Witmer of Waterloo-Wellington, were elected to fill vacancies on the ODA Executive Council.

Honors awarded

The ODA's highest honor, the Barnabus Day Award, was presented to two recipients, Drs. B.M. (Bruce) Jackson, of Kitchener, Ontario, and W.H. Treleaven, of Kingston.

Service awards were presented to several dentists who have also given and continue to give, outstanding service to the Canadian Dental Association. They include Dr. Y. Kamachi of North Bay, Ontario, who was a long-time Chairman of the CDA's Council on Information Services, and Dr. Jack Gryfe of Weston, Ontario, who is currently Chairman of the CDA Government Relations Committee.

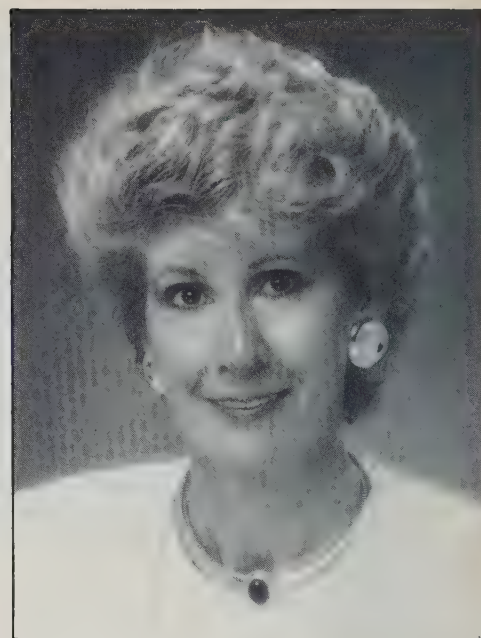
Mrs. Patricia Duminy, who served 11 years as Executive Secretary of the Ottawa Dental Society, and is now Coordinator of CDA's Dialogue in Dentistry program, received a citation from the ODA.

New ODA quarters

The ODA reports that it is hoping to relocate in a new headquarters building. It is seeking a location in the core area of Toronto, preferably close to the Ontario legislative buildings. △



Dr. Yosh Kamachi



Mrs. Patricia Duminy

'Use stress to create success'

"A Weekend Retreat for the Professional and Their Team" is scheduled for September 15, 16, 17, 1989 at the PineStone Inn, Haliburton, Ontario. The Retreat, jointly sponsored by the ODA Dentist at Risk Committee and CDSPI is designed to teach a variety of techniques to combat deleterious effects and burnout and enable the dental health worker to detect problems and implement appropriate preventive measures at an early stage.

The comprehensive weekend program — 4:00 PM Friday to 3:00 PM Sunday — features renowned speakers dealing with such topics as . . .

- Personal Time Management & Stress
- Medicine Walk
- Counselling
- Enhancing Your Creativity
- Exercise, Nutrition & Dealing with Back Pain
- Ways Our Lives Are Influenced by Stress
- Marital and Family Therapy Counselling.

The \$650.00 per person fee includes accommodation, all meals, seminars/workshops and handout materials. Further information may be obtained by contacting Carole Latibeaudiere, Co-ordinator for Professional Development, Ontario Dental Association, telephone 416-922-3900. △

On the eve of Installation

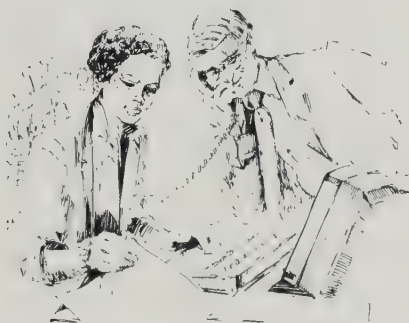
Dr. Kevin Roach comments on goals and issues in organized dentistry

At the annual meeting of the Canadian Dental Association Board of Governors in Vancouver Dr. Kevin Roach will become the 70th President of the CDA.

Dr. Roach, a former President of the Ontario Dental Association, is a private general practitioner in Pembroke Ontario. He had an early start in organized dentistry affairs having served as CDA Student Governor prior to receiving his dental degree from the University of Toronto in 1973. An Ontario representative to the Board of Governors since 1979, and on the Executive Council since 1986, he has been a member of the Management Committee since he became President Elect last year.

Although essentially a member of a team, the President is the "spokesperson of the national association", but each president in turn brings to organized dentistry his own experience, objectives and goals. The Journal in conversation with Dr. Roach has endeavored to highlight for the CDA members some issues which seemed to be at the forefront of dentistry today.

Communications



The Journal (does it have a vested interest?) first asked Dr. Roach his thoughts regarding *Communications* by suggesting that the topic was really the heart and soul of any organization.

Dr. Roach replied, (and aren't we pleased), "The CDA Journal should remain the premier scientific medium for Canadian dentistry (and we agreed!) but with perhaps more in-depth feature articles on dentists prominent in their community, political organizations, what-have-you."

Dr. Roach indicated, "The Journal will continue as an outstanding membership value, but this is not nearly enough. Our membership demands more frequent and up-to-date communication not presently supplied with a Journal subscription. In my view, there should be a form of communication generated in-house using a desk-top publishing system. It should be a colorful, classy type of presentation and should appear on a regular, time-sensitive basis. The "Communique" certainly is the type of document I have in mind. The Presidential letter is another method fulfilling communication priorities but it should be reserved for "as it happens" issues of particular importance to dentists *now*."

"I also envisage", said Dr. Roach, "the publication of an annual report, something that has never been done. Again, it should be created in-house and include items that have been accomplished by the Association during the past year. There must be a financial accounting to the membership. I also think it would be a good idea to include a section outlining our senior staff and their roles, as well as senior elected officials and their responsibilities."

Membership

Membership Card
Carte de membre

Canadian Dental Association  L'Association dentaire canadienne

Member's Name
Nom du membre

Membership No.
N° du membre

Unique No.
Numero unique

Valid From
En vigueur le

to


President / Président

Member's Signature / Signature du membre

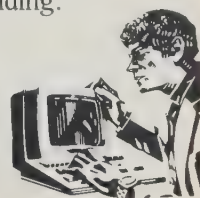
1815 Promenade Alta Vista Drive, Ottawa, Ontario K1G 3Y6

For some time now, both Ontario and Quebec have been on a voluntary basis. These two provinces also have a distinct separation between licensing fees and membership dues, and as a result of this, they are on a mandatory basis for the licensing fees in order practice dentistry in their particular province. However, they have the option of paying voluntary membership dues to either their provincial body or federal association or to both.

Should this type of situation arise in other large provinces throughout Canada, CDA would indeed be pressed financially. I have no doubt that given the choice, members across the country would first look to their own backyard, that is their own provincial association, before looking across the breadth of this country to CDA in Ottawa. However, I think CDA can and should compete for the membership dollars.

At the present time, 72 per cent of CDA revenues are derived from membership fees, and 28 per cent from non-dues revenue. It is certainly my goal to bring this to a 50-50 relationship throughout my term on Management Committee. I see increased revenue coming from sources such as CDA publications and promotional material, the EDI system from the very successful Affinity Card Program initiated by the Membership Committee, as well as increased rental revenue at CDA Headquarters, as a direct result of modernizing our 12 year old building.

EDI



A new term has cropped up in dental language, EDI. The Journal asked Dr. Roach to explain what it will mean for the average dentist.

EDI stands for Electronic Data Interchange, and I wish to state at the outset this is not a mandatory program. EDI is indeed the future of bilateral communication with the dental insurance industry. With a simple PC in-office computer, dentists will be able to submit claim forms electronically directly to the insurance carriers. Payments may be received, again electronically, from the carrier, either directly to the dentist's office or, in the future, even to a personal bank account. EDI will also be used for the submission of treatment plans for predetermination. The time frame for response will be shortened dramatically — down to the range of two or three days. As we develop the system, we are hoping for a full on-line reactive mode.

CDA has invested in the neighbourhood of \$55,000.00 in this project to date, and has an agreement with the provinces for distribution of monies on a per-claim basis, saved by the carriers, by way of decreased handling costs. Therefore, indeed, CDA and the provinces will stand to make some income from this particular process. This income quite obviously will be put to good use, and optimistically, limits the increases in membership fees for all involved.

My last word on this issue would be that it is absolutely essential that Canadian dentists belong to our network only, and not to any other network that may present itself in a particular region of the country. The reason for this should be quite obvious. In our network, we control the data, and therefore we control our own destiny.

Space and Staff



A direct question was put to Dr. Roach: "CDA is planning on renovating its building in Ottawa at a cost of \$1.25 million (having just paid out the 1976 mortgage) and also, CDA plans to expand staff from the present 35 to 55. Why do we need more space, more staff and how much will it cost?"

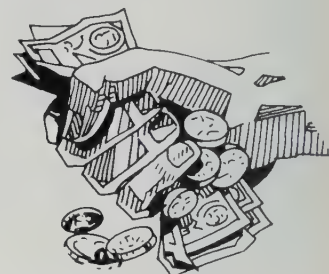
Dr. Roach explained, "With our accountant's advice last year, CDA did pay down the \$400,000.00 mortgage from investments and money on hand and we still maintain an equivalent amount of operating credit with our bank. This line of credit will be expanded as required to fund the necessary renovations to the CDA Ottawa headquarters. With increased member services planned in the near future it is essential to provide suitable working areas. The building was designed for 1976 activities and our mandate to members has continued to expand over the years.

All options were considered: selling and rebuilding, renting mid-town office space or renovating our prime location in Ottawa's health-science area. The renovation plan I firmly believe is the wisest choice. We will take over some of the space now leased by tenants and with redesign of the entire structure CDA will have sufficient working area for the foreseeable future.

But nothing is gained without a price. The renovations will cost

in the neighborhood of \$135,000.00 annually over the next ten years. Not an insignificant amount of money but not a major concern when you look at a global operating budget in excess of \$5 million dollars. In my role as Chairman of Management this past year I have looked at all aspects of this project and members may rest assured that it will be well managed.

The Budget



We are happy to see that CDA has balanced its budget over the past two years. In fact for 1987 and 1988, CDA has come in under budget. Can the membership expect this trend to continue? Does this mean that there are no increases in membership dues in the next few years?

My predecessors, Dr. Ron Markey and Dr. Jack Niedermayer were indeed frugal managers. Both Presidents limited their travel across the country to major political functions, and assigned other members of the Executive to attend student nights, dinners and smaller regional meetings. Our Executive Director, Mr. Jardine Neilson, and myself are committed to balanced budgeting, but are also firm believers in paying our bills when due, and therefore membership fees will continue to increase at a rate commensurate with our commitments. Having said this, I can assure you that my successor, Dr. Gilles Dubé, is also an avid number cruncher, and I am sure he will do everything he can to keep CDA financially solvent during his term as Chairman of Management.

We are often asked the basis for any increases in membership dues, whether it is CPI, inflation, or whatever. Quite simply, each Fall, the Management Committee and Executive Council has a priorities and planning session for the coming year. At this session we decide which items of benefit to our membership are within budget and which items are that crucial to our membership, that we should go over budget to provide them as soon as possible. The demands on our budget are thus membership generated, and should rightfully then, to a certain extent, be membership funded.

Accreditation



Final approval has been given and the process is under way to separate the Council on Education and Accreditation into two separate bodies. Why was this necessary? Wasn't it working before? Will this not just mean more people, costing more money? Who is going to pay for this extra bureaucracy? Will membership fees be affected?

At the 1989 Interim Board, CDA Governors voted constitutional approval for the creation of separate Councils on Education and Accreditation.

The new Council on Education will be primarily responsible for advising the Canadian Dental Association on all issues related to the education of dentists, dental specialists, and dental auxiliaries.

The new Council on Accreditation, on the other hand, will be strictly concerned with the establishment of national standards under which educational programs and dental services are accredited or granted public recognition by the Canadian Dental Association. As you are aware, current graduates of accredited programs in dentistry are eligible to receive the National Dental Examining Board of Canada certificate without further examination. The Provincial Dental Licensing Authorities, in turn, recognize this certificate for purposes of licensure. It is, therefore, very important that the Council on Accreditation reflect the appropriate educational and dental expertise and be free to set and enforce standards that will be both credible to the NDEB and licensing authorities and clearly in the public interest. With the new Council on Accreditation, Canadian dentistry at last has an arm's-length body, divorced from political influence and thus more credible to government and the public, as a foundation for the national accreditation process. Dare, I say, not a day too soon, with the ever-increasing scrutiny by groups such as the Ontario Access to the Trades and Professions Legislative Committee, and the Federal Human Rights Tribunal and even the Supreme Court of Canada.

Costs are not substantially greater than under the old structure, and because each and every licensed dentist in Canada benefits, he/she pays for this service via a \$20.00 accreditation transfer grant collected by the Provincial Licensing Bodies in support of the Council on Accreditation. My heart-felt thanks to the licensing bodies for their cooperation in this vital process. Since their national certification progress is based upon the accreditation process, the National Dental Examining Board also annually grants substantial funding to the Council on Accreditation. These monies fund only this vital organ of Canadian dentistry, and each contributor receives a full accounting of the Council's expenditures, along with copies of reports pertinent to their individual jurisdictions. Under the new arrangement, professional fees related to annual licensure and certification provide the bulk of the financial support for accreditation rather than active membership fees. This seems to me to be in keeping with a quality assurance process that we recognize as working in the interest of the public and the profession as a whole.

Government Relations



There has been considerable activity in this area in the last two years. Five years ago there were no government relations. Do you feel this activity and committee is working well? Do you plan on doing anything different?

Want tangible benefits for your membership dollar? — look no

further — clarification and reduction of tariffs and duties on dental materials, increases in registered retirement savings plans limits, deductibility of continuing education expenses, precise definitions of management companies as opposed to service corporations *AND EXEMPTIONS FROM A NATIONAL SALES TAX TO BE INTRODUCED IN 1991* — kindly send your cheque for \$330.00 to CDA, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6. All of these are indeed laudatory developments, and CDA's role in bringing them about is pretty well known. Equally important, but less well known, perhaps, is CDA's success in limiting the negative impact on dentistry of the Canada Health Act and in making the views of Canadian dentists known (and influential) in the Federal Government.

I hope to initiate better coordination in the government relations sphere by making this the prime responsibility of our new Vice President. This move will also serve as an additional internship on his journey to the CDA President's Chair.

CDA/CDHA/CDAA



How are relations between the CDA and these two auxiliary groups? Several questions arise:

- a) **Is the CDHA satisfied with the CDA guidelines on supervision? A recent letter to the Journal editor seemed to suggest "the statement does not recognize adequately the education of dental hygienists".**

As chairman of the Ad-hoc committee that drafted the CDA Guidelines, let me say that these were meant for the dental profession's guidance and it was anticipated that CDHA might not agree with the statement. In spite of extensive consultation with the provinces, what was finally produced was watered down beyond my expectations, in the spirit of Canadian compromise, surely, but more realistically, because of a lack of national agreement about dental hygiene duties. All that is left, perhaps, is a statement of principle that the dentist and not the dental hygienist is the primary care practitioner and hygienists would like to further qualify this position. Having said that, I am acutely aware of the value of the hygienist in the oral health care team and of cooperation with CDHA. I strongly support the national competency profile developed by CDA/CDHA, and have been a vociferous supporter of a certification process for dental hygiene at the national level. I think that CDA/CDHA relationships are really pretty good; differences of opinion don't necessarily mean bad relations.

- b) **Do hygienists really want independent practice?**

My personal research continually produces a negative response. But naivety is not in my lexicon, and if the ODHA, while representing less than 50 per cent of Ontario hygienists, can achieve their own college in Ontario (almost exclusively because of a past RCDS President's refusal to grant them voting representation on the RCDS Board — a travesty which the CDA guidelines do address most definitely), then independent practice is no longer a fictional threat. Independent practice will occur first (and for a long

time exclusively) in the senior citizen and nursing home setting, likely on a government sponsored or funded basis.

c) Why are there not more hygienists available for private practice? Why do the ones we have seem to demand such high salaries?

That's easy. The demand side of the equation continues to far outstrip the supply side, where the number of hygienists is concerned. Colleges faced with budget problems may take an easy path to budget balancing by terminating expensive dental hygiene programs. Canadian hygiene programs could easily change the situation by charging adequate tuition fees (in the three to four thousand dollar range). Canadian applicants gladly pay such tuition to the University of Buffalo annually and easily recoup their costs in their first two months of practice. College hygiene programs could flourish if government permitted tuition fees to climb. If dentists continue to assess \$35.00 per 15 minute time unit of root planing and scaling, carried out by their hygienist, the stratosphere is the limit for hygiene salaries. Let's give these hygienists some credit for good business sense. . . .

d) Are all provinces utilizing certified dental assistants enough? We understand that in the province of Manitoba where there is a high utilization of auxiliaries, that dentists are able to have the highest per-capita income in Canada, while maintaining the lowest fee guide in Canada. Surely there must be a co-relationship.

Very astute observation, Mr. Editor. Some provinces are not using intra-oral dental assistants and are missing an opportunity to build productivity and decrease costs. CDA has been encouraging movement in this direction by working on the development of national standards for a level 2 chairside dental assistant. We have also been encouraging CDAA in their attempts to develop a national certification process. CDAA has completed work on a new approach to national certification of level I Dental Assistants and has indicated it is ready to build a level II certification examination upon CDA's standards, once they are approved. CDA has supported and I will continue to assist the CDAA in these very laudatory initiatives. Yes, this is a partial solution to the dental hygiene dilemma, but more importantly will allow more dentists, like our Manitoba counterparts, to provide quality care at reasonable rates to our patients. This would obviously help in our ongoing capitation and preferred provider organizations battle.

Advertising



On a recent trip to the United States, it was noticed that the Yellow Pages, newspapers, TV, billboards, all had glitzy (some offensive!) advertising of dental services for private practitioners. How soon can we expect this type of advertising in Canada? Do you believe that if advertising was "wide open" the competition activity would lower dental fees?



Dr. Roach and Hygienist Karen Syrie with a young patient.

I would like to say "never", but realistically the best that we will obtain is a "made in Canada" solution. As you are aware, the Supreme Court of Canada has clearly stated that commercial speech does indeed enjoy Charter protection, albeit not as unconditionally as political speech. The CDA will be proactive in this area by encouraging provincial licensing bodies to establish guidelines for in-office marketing, newsletters, letterhead, commercial advertising, etc. At the risk of crystal-ball-gazing, I would say that advertising one's fees as well as services one chooses to perform or subspecialize in will be legal very soon in at least the larger provinces in Canada. This is already the case with the legal profession. With the ever-increasing office overhead (in the 65 per cent range), infection control procedures, Federal UIC changes, payroll taxes and what-have-you, the net effect will unfortunately be more "fee guide shopping" rather than lower fees. Government does not have to look further than my home province of Ontario and examine the full denture fees charged by denture therapists for proof of this prediction. Δ

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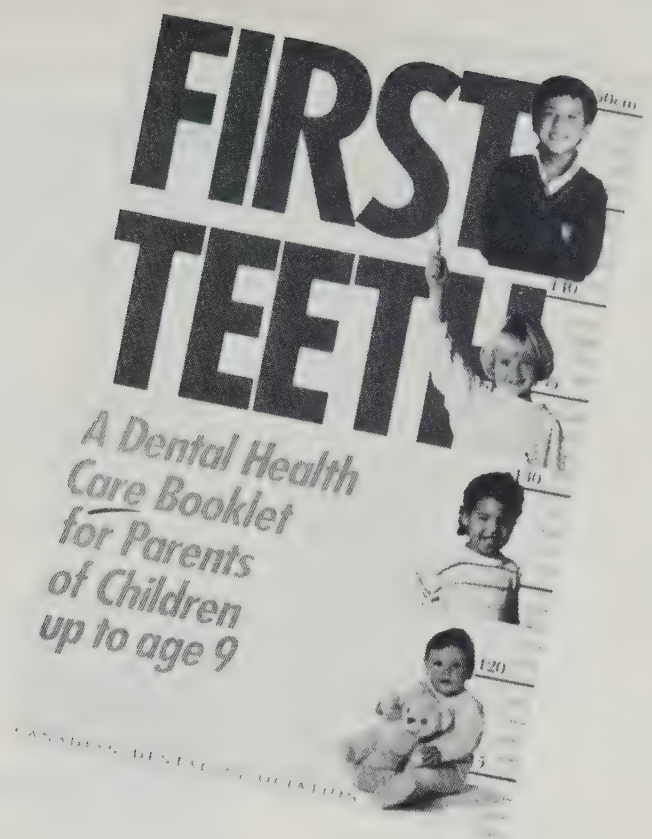
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Ottawa, Ontario
K1G 3Y6

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(Eastern Canada except area code 709)
1-800-267-6354
(Western Canada and area code 709)
Please have your credit card number
with expiry date ready.

CFDE announces 1989/90 awards

The Canadian Fund for Dental Education recently announced the recipients of its 1989 grants and 1989-90 Teacher/Researcher Fellowships.

Among the recipients of the \$212,444 in grants were: each of the ten dental schools, with allocations for Unrestricted Grants of \$1,500 and Undergraduate Grants of \$2,000; the fifth CFDE/ACFD Summer Teaching and Management Institute which was held in July at the University of Manitoba received a \$38,000 grant; \$10,500 has been allocated to the 1989 CDA Teaching Conference on 'Ethics and Professionalism'; the Dental Students' Table Clinics and Students' Conference will be supported again with grants of \$10,000 and \$9,000 respectively.

A total of \$45,000 has been allocated for programs to increase public demand for dental health care; in addition, CFDE has granted up to \$10,000 for the CDA Dental Health Month. The income from the Lorne E. MacLachlan Endowment Fund of \$13,752 will again this year be divided equally among the dental faculties at Toronto, Western Ontario, McGill and Dalhousie to benefit their prosthodontics departments.

The Murray McDonald Memorial Lecture to be held in August at the CDA Convention in Vancouver. Mr. Allan Fotheringham is this year's speaker.

A total of \$24,500 was allocated for teacher/researcher training fellowships. Six dentists and one hygienist were among the seven applicants selected for support this year. **Dr. Gilles Gauthier**, University of Montreal and **Dr. R.D. Mazurat**, University of Manitoba, were each awarded \$5,000 for their continuing study in the field of prosthodontics.

The five remaining awards to **Dr. Alan Kwong-Hing**, University of Toronto, of \$3,000; **Ms. Bonnie Trodden**, University of Manitoba, of \$3,000; **Dr. Salam Sakkal**, University of Montréal, of \$2,500; **Dr. Carol-Anne Murdoch-Kinch**, Dalhousie University, of \$2,500; and **Dr. Benoît Lalonde**, University of Montréal, of \$2,500; represent a wide spectrum of study in dental research and hygiene. These areas include Oral Medicine; Oral Biology/Biomaterials/Implantology and Periodontics; Oral Radiology; Oral Medicine/Endodontics; and Anthropology. Two applicants: **Dr. Kwong-Hing** and **Ms. Trodden**, were considered equally meritorious of the Henry M. Thornton Award of \$1,000. △

Obituaries/Nécrologie

Alexander, Laurie B.: Born in 1905, Dr. Alexander was a graduate of North Pacific College of Oregon in 1939, and conducted a practice in Maple Ridge, British Columbia from 1940 to 1973.

Bichay, Waguhi F.: Dr. Bichay was a graduate of the University of Toronto, Faculty of Dentistry, in 1969. He conducted a practice in downtown Toronto.

Caza, Horace: Diplômé de l'École de médecine dentaire de l'Université de Montréal en 1950, le Dr Caza a tenu cabinet à Hull, Québec, durant de nombreuses années.

Grierson, David W.: Born in 1952, Dr. Grierson was awarded his dental degree by the University of Alberta in 1977. He conducted a private practice in Edmonton, Alberta, from 1977 to 1989.

Hughes, Albert E.: Born in Winnipeg in 1903, Dr. Hughes was a graduate of the University of Toronto in 1925. He practised in Sarnia, Coldwater and Toronto. He retired in 1972. Dr. Hughes was a Life Member of the Canadian Dental Association.

Johnston, Gordon: Dr. Johnston was a graduate of McGill University in dentistry, in 1952. He conducted a practice in Pointe-Claire, Québec.

CDA Retirement Savings Plan

Unit values: (Funds are valued weekly)

Fund	Unit values as at	
	June 30, 1989	May 31, 1989
Bond & Mortgage Fund	68.14243	67.21375
Common Stock Fund	16.35879	15.78892
Money Market Fund	45.06957	44.66857
Balanced Fund	28.94391	28.18021

G.I.C. Fund Term	*Interest rates as at	
	June 30, 1989	May 31, 1989
1 yr	11.10%	11.40%
2 yr	10.85%	11.10%
3 yr	10.60%	10.85%
4 yr	10.35%	10.65%
5 yr	10.35%	10.65%

(*rates subject to change without notice.)

Total Assets (Market value) of the Plan as of:

June 30, 1989	May 31, 1989
\$112,922,408	\$110,068,749

For further information:



CDA RSP

Write:

CDSPI

Retirement Services Dept.
Suite 600
2 Lansing Square
Willowdale, Ontario
M2J 4Z3

or phone, toll-free:

Western and Atlantic Canada
and Ontario Area Code 807
only 1-800-268-5418
Quebec and Ontario, (except Area
Code 807) 1-800-268-3411
Metro Toronto Area 497-7117

A Report

1988 CDA Teaching Conference on Continuing Dental Education

The topic of the Teaching Conference held in Montréal was Continuing Dental Education. Guests from the 10 Canadian dental faculties (ACFD), the Canadian Dental Association (CDA), the National Dental Examining Board (NDEB), the Canadian Dental Hygienists' Association (CDHA) and from provincial and local dental associations were at the well attended meeting. The Conference was made possible by a grant from the Canadian Fund for Dental Education (CFDE), which was also represented at the proceedings.

This overview of the Conference and of a related survey have been prepared in response to a strong continuing interest in the conference discussion and in the topic of Continuing Education.

Background

The Conference came about because of the interest of dental educators and national and provincial dental bodies, especially licensing authorities, in sharing information about problems and projects, frustrations and aspirations. Part of the planning and preparation for the conference involved the completion, by providers of Continuing Dental Education, of a special survey designed "to assess the current status of professionally based CDE in Canada". A summary of the results is attached.

The conference topic was approved by the ACFD and the CDA Council on Education and Accreditation. Dr. Guy Boyer of the Faculty of Dentistry, University of Montreal, was appointed as conference chairman.

Overview

Dr. Guy Boyer
Faculty of Dentistry
University of Montréal
— Chairman —



The conference was organized into an opening and concluding plenary session, with six workshops taking place in between. The opening session was directed by Dr. Guy Boyer, and the concluding session by Dr. Arthur Schwartz,

then Dean of the Faculty of Dentistry at the University of Manitoba. Each of the workshop leaders presented a discussion paper during the opening session. The following summary reviews each of the six conference topics, briefly describing discussion and the thrust of the principal recommendations.

Marketplace Competition Versus Balanced Programming

Dr. Gerry Wright
Associate Dean, Faculty
of Dentistry, University
of Western Ontario



Dr. Wright's presentation and workshop examined concerns related to the large number of providers currently involved in continuing dental education. One consequence noted is that competition tends to steer providers into the popular or obvious areas of interest and can work against the availability of balanced programming in a given area. The workshop conclusions encourage development of provincial mechanisms to assist such availability and also encourage improved communication regionally, provincially and nationally, among providers.

Educational Technology

Dr. John Eisner
Faculty of Dentistry
Dalhousie University



Dr. Eisner's presentation and workshop focused on the potential impact of information technology on continuing dental education. Topics discussed included Distance Education, Computer Conferencing, Interactive Video, Self-learning and Assessment, Testing for Continued Competence, and Program Planning, Analysis and Administration. One conclusion of this workshop highlighted the need for courses on information technology in

universities, for both faculty and students. It was also felt that directors of Continuing Education at Canadian Faculties of Dentistry should meet annually through CDA or ACFD. A CDA electronic bulletin board was suggested as a means of maintaining a national roster of courses and speakers. Much emphasis was placed upon the need to augment sources of funding for continuing education. The workshop also touched upon quality assurance with a recommendation that research should be integrated into continuing education programming to measure effectiveness.

Mandatory Continuing Education

Dr. James Gillespie
Assistant Registrar,
Royal College of Dental
Surgeons of Ontario



Dr. Gillespie's presentation and workshop examined the topic of mandatory continuing education. Some attention was paid to arrangements in the four western provinces where mandatory continuing education is in place, and Ontario's plans to introduce mandatory continuing education were discussed. The conclusions of this workshop underlined the need for licensing authorities to accept responsibility for verifying individual efforts towards maintenance of ongoing competence. There was a feeling that information about the experience of the four western provinces would be a valuable resource to other provinces and a recommendation that they should assess the effect of existing programs and prepare a report for distribution to interested groups such as those attending this conference. Recommendations also warned about the distinction between Mandatory Continuing Education and Quality Assurance; the need to recognize that Continuing Education should be perceived as being only ONE component in ongoing professional competency development and that Continuing Education

courses are not intended to lead to specialty qualifications. This workshop also stressed the need for an annual conference of Continuing Education Coordinators and for some means of helping continuing education consumers to determine the quality of offerings.

Requirements for Professional Competence

Dr. Henry Dick
National Dental
Examining Board



Dr. Dick's presentation and workshop discussed what is meant by professional competence and the strengths and weaknesses of current continuing education efforts. The group felt that the profession must develop a preventive philosophy to decrease the need for peer review, which essentially operates remedially and late. One recommendation accordingly was to teach peer review concepts in the undergraduate program and to encourage the selection process for dental applicants to reflect those characteristics which support professionalism and continued competence. This group emphasized that the dental profession must develop an operational definition of competence, both at the professional and individual levels, and that mandatory continuing education is but a process and not an end in itself. The recommendations look towards a more proactive future, where the definition of competence is clear, mechanisms are available to the individual to determine needs and continuing education offerings are capable of bringing about behavioural change.

Participation-Type Programs

Dr. Don Cunningham
Assistant Dean, Faculty
of Dentistry, Dalhousie
University



Dr. Cunningham's presentation and workshop reviewed hands-on or participation-type programs as distinct from other types of continuing education

offering. Discussion confirmed the perception that hands-on courses are the only way to accomplish certain continuing education goals, such as development of clinical skills. It was also felt that the people who really need them may shy away from them because of fear that they might be embarrassed. It was acknowledged that many other aspects of continuing education may be offered in a variety of ways, including methods relying on information technology as reviewed in the workshop on this topic. The problem is that when hands-on learning is really required, these latter methods cannot fully substitute. The conclusions of the workshop acknowledged the importance of self-assessment in determining the need for a hands-on course and the importance of sequencing hands-on instruction to provide for progressive development of skills. The importance of pre-requisites was noted in this context, as was the need for follow-up evaluation to determine if courses have been successful.

Guidelines for Approval of Providers

Mr. Brian Henderson
CDA Director of
Education and
Accreditation

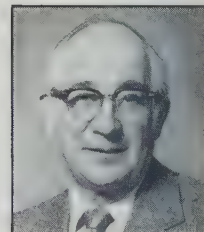


Mr. Henderson's presentation and workshop examined the topic of guidelines for the approval of sponsors or providers of continuing dental education. Group discussion confirmed that there is a real need for methods or approaches which might assist the continuing education consumer to recognize quality programs. Much of the discussion focused on the question of where such responsibility lay, and the consensus was that licensing bodies carry a prime responsibility as they determine which courses will be recognized for credit. Two documents describing accreditation-like approaches to recognition of continuing education "providers" were reviewed, and the group concluded that an approach based upon accreditation of providers should not be pursued. The recommendations of this workshop encourage the national development of tools which the licensing authorities might employ in their process of recognizing individual courses. It was felt that

these might include standardized course evaluation forms to be filled in by students on the completion of courses. These could be pooled nationally and over time create a data base with research potential.

Conference Recommendations

Dr. Arthur Schwartz
Faculty of Dentistry
University of Manitoba



The plenary session which followed the completion of all the workshops provided an opportunity for all those attending the conference to hear the reports of each of the workshops and to discuss the common themes and concerns emerging from their preoccupations and recommendations. The recommendations were categorized into the groupings of research, funding, communication and recognition/support. They are presented herewith.

Recommendations

Research

1. That the following urgent priorities for research in support of Continuing Dental Education be directed to all Canadian dental organizations and faculties of dentistry:
 - The need for development of mechanisms or processes to determine the REAL needs of individual learners;
 - The need for development of evaluation methodologies and related instruments to permit assessment of the effectiveness of Continuing Education programs.

Funding

2. That all providers of continuing dental education courses and, where appropriate, other related bodies, be encouraged to set aside funds, on an annual basis, for:
 - National coordinating meetings and workshops;
 - Course and program evaluation and other research initiatives.
 - Development of new technologies and methodologies for the delivery of programs.

Communications

3. That the CDA Council on Education and Accreditation consider revising the membership and terms of reference of its committee on continuing education to bring together representatives of Licensing Authorities, Coordinators of Continuing Education within provinces and at Canadian Faculties of Dentistry and other constituencies with a perspective on current issues and problems in continuing dental education and potential to expedite cooperative approaches to their solution.
4. That CDA consider developing an electronic bulletin board conferencing service, in support of continuing dental education.
5. That the ACFD consider establishing a section on continuing education to permit annual meetings of continuing education coordinators.
6. That further workshops on continuing dental education should be organized regularly in the near future, in order to bring together individuals from across Canada who are concerned with the problems and issues of this developing field.

Support

7. That CDA and other national and provincial dental organizations (including licensing authorities) recognize the necessity of supporting initiatives in the developing field of continuing education.
8. That Canadian Faculties of Dentistry be encouraged to recognize and support the needs and academic status of Continuing Dental Education on the same basis as other academic sections within the faculty.

Conclusion

The 1988 CDA Teaching Conference on Continuing Dental Education proved, first and foremost, that there is a real need for further national communication on the subject of continuing dental education. All of the workshops, and the final plenary discussion, stressed the existence of common problems and the potential of experience in other provinces or areas to help develop solutions. There is strong interest in further conferences on continuing education and in developing cooperative mechanisms.

It is apparent that both professional bodies and educators are looking for ways to identify the real needs of pro-

fessional learners, for ways to identify quality educational programs which can respond to such needs and for ways to determine if the programs have actually met the learner's needs. Those in the field are looking for the tools required to do the job and encouraging initiatives in research and development necessary to supply them.

There is strong interest in the impact of provincial requirements for mandatory continuing education. There is also some concern that the introduction of mandatory continuing education programs will not automatically solve all problems and should not preclude the profession's ongoing efforts to respond in educationally sound fashions to the needs of professional learners.

Finally, there is a general feeling, which surfaced in various ways throughout the conference, that the field of continuing dental education is a bit like an orphan or second class citizen; the cause is worthy but funding, recognition and support are not often as forthcoming as they can be for other areas of academic and professional endeavour. It is hoped that this initial national conference on continuing dental education may be one small step towards helping to change that, by highlighting the common problems and needs of those involved in the field and the importance of the dental profession and to the public, of their succeeding in their efforts. Δ

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PLAQUE
MOLAR
ROOT

(This "search" appeared in *The Bulletin* Atlantic-Cape May (New Jersey) Dental Society.)



Left to right are: Lawrence Forbes of Hub Dental Laboratory; Pauline Bissett, Promotional Resources Ltd., editorial production, design and typesetting, and Norman Dupuis of Tribune Press Ltd., printing.

A Moncton dental laboratory has won international recognition for its quarterly newsletter "Word of Mouth".

Hub Dental Laboratory, received the top marketing award for a newsletter in North America by Lab Management Magazine, a leading United States lab marketing publication. The award was one of eight presented for separate categories ranging from best logo to newsletter production.

Editorial production, design and typesetting for the six page newsletter, produced four times a year, is by Promotional Resources Ltd., a Moncton-based advertising and public relations firm, with printing by Tribune Press of Sackville. Δ

Three recent publications of interest to dentists are now available, free of charge, from Health and Welfare Canada.

- Preventive Dental Services — Second Edition. This is a comprehensive document of 230 pages, edited by Dr. Donald W. Lewis of the Faculty of Dentistry, University of Toronto. It is a review of the many dental services provided in Canada which focus on prevention, rather than treatment of dental diseases.
- The practice of Dental Hygiene in Canada — Description, Guidelines and Recommendations. This is a 178-page document representing the report of the Working Group on the Practice of

Dental Hygiene — Part One.

- Clinical Practice Standards for Dental Hygienists in Canada. Part Two of the Report of the Working Group on the Practice of Dental Hygiene. A short volume of 18 pages outlining clinical dental hygiene practice criteria and standards.

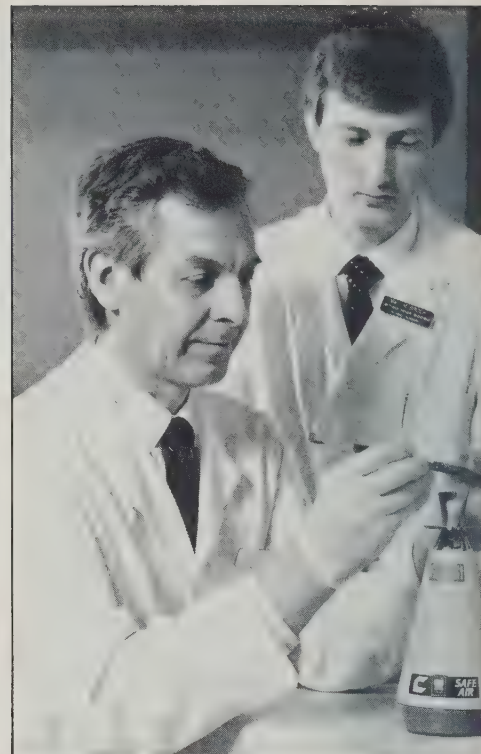
Free copies may be obtained by writing to: Ms. Sharon B. Amer, Advisor, Dental Health Standards, Health Services Directorate, Health and Welfare Canada, Ottawa, Ontario K1A 1B4. Δ

A cooler blast of hot air

Dentists risk serious injury when they are wearing latex gloves to protect them from possible cross-infection by patients who have AIDS or hepatitis. The gloves are highly flammable and ignite instantly when used with a bunsen burner to melt wax for dental impressions.

A safe solution to this problem has been devised by Ian Brook, left above, a lecturer in dental surgery and David Lamb, a lecturer in restorative dentistry at the University of Sheffield School of Dentistry in Britain. They have invented an electric hot air heater called Safe-Air, which blows out temperatures at about 400 degrees centigrade — hot enough to melt wax, but below the flammability level of latex.

In addition to dental surgeries, the heaters are also used in hospitals, university and school laboratories and many



industrial sites. They are being made under licence by a company in the English Midlands. Δ

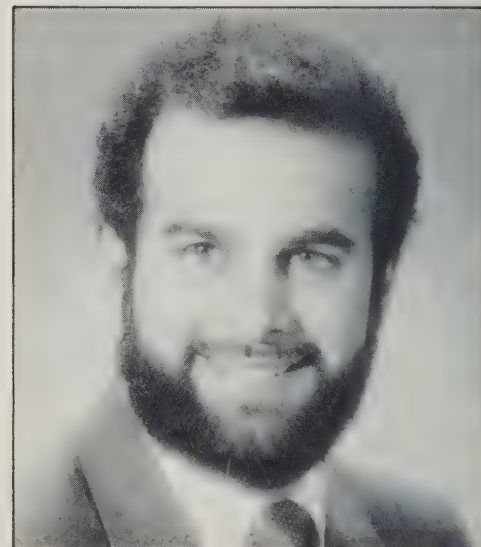
(COI London)

The Ontario Society of Periodontists recently elected its line officers for the year 1989-1991 term.

The President is Dr. Murray Arlin of Weston, Ontario.

Dr. Ken Hershenfield of Willowdale, Ontario is the new President-elect. Dr. Steve Corber also of Willowdale, is the Secretary-Treasurer.

The Program Chairperson for the new term is Dr. Monique Fitch, of Barrie. Δ



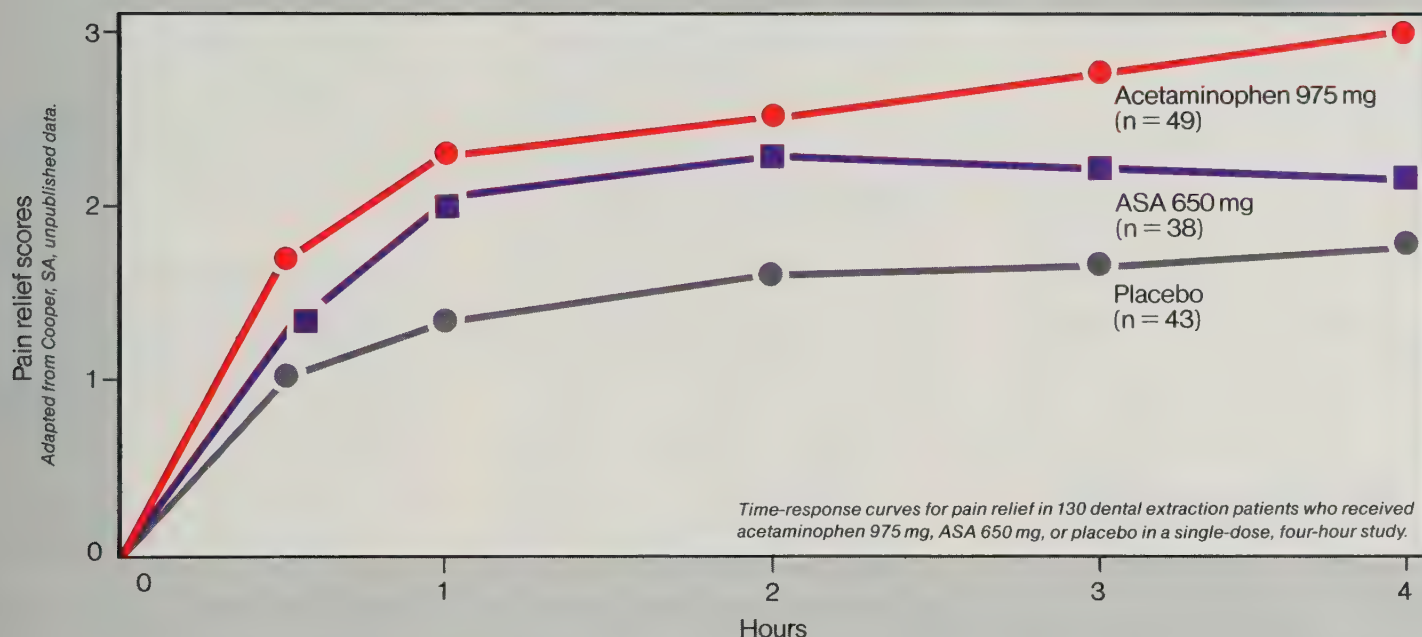
Dr. Murray L. Arlin

You have to think about much more than pain relief when you recommend an analgesic

With some of the many analgesic choices available, you need to address a lot of medical questions to make a responsible professional recommendation.

Is the patient asthmatic or sensitive to salicylates, prone to ulcers, taking potentially incompatible drugs? A "yes" to any of these questions would exclude any ASA or ASA-narcotic combination product as well as all NSAIDs. And, of course, if there is a risk of bleeding, they would also all be contraindicated because their antiplatelet activity could aggravate bleeding.

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EXTRA-STRENGTH **TYLENOL** ^{*} acetaminophen **CAPLETS**

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If you don't believe the would you believe

I earn my living writing advertising. And as I happily prepared to write this ad with a litany of cute expressions, catch phrases and the odd pun or two, you can imagine my horror when I was handed an oppressive stack of research results regarding the benefits of oral irrigation using a Water Pik Dental System.

Frankly, it's not something everyone wants to read about, let alone write about. Gingivitis. Pockets. Subgingival access. But if anyone understands the importance of these things, you do. And far better than I.

So, I had no alternative but to use this research. Now, I've done my best to make this material readable but I'm not making any promises. Yet as much as I hate to admit it, these findings seem to be far more compelling than any ad I could write.

The purpose of this comprehensive study was to demonstrate the benefit of Water Pik Oral Irrigation on gingival health by measuring effects on clinical parameters and marginal and subgingival microflora.

Treatment groups, adjunctive to normal oral hygiene were compared over six (6) months:

- Group I daily irrigation with 300 mL water, then 200 mL 0.06% Chlorhexidine
- Group II daily irrigation with 500 mL of water
- Group III twice-daily rinse with 0.12% CHX (positive control)
- Group IV toothbrush (negative control)

Patients were randomly assigned and balanced by age and gender.

Enhancement of Gingival Health by Oral Irrigation with Chlorhexidine.

3-MONTH RESULTS

M.G. Newman, T. Flemmig, F. Doherty, et al. (UCLA School of Dentistry)

Study Summary: A double-blind study of 187 patients assessed the improvement of gingival health and reduction in disease-associated bacteria by oral irrigation. (Water Pik).

At 3 months compared to negative control, the group 1) irrigating with 0.06% CHX had statistically significant ($P \leq 0.01$) reductions in GI (46.3%), GI Bleeding (53.7%), BOP (39.8%), plaque (50.9%) and pocket depth (5.5%). Water irrigation alone significantly reduced GI (30.0%), GI Bleeding (44.9%) and BOP (24.6%) but did not significantly reduce plaque (2.4%) or pocket depth (0.5%).

Compared to positive rinse control, irrigation with 0.06% CHX was significantly better for GI (60.0%), GI Bleeding (88%), BOP (221%) and pocket depth, and also better for plaque and GI than water alone. CHX rinse was effective relative to negative control. Groups using CH had significant reduction in "Actinomyces"; CHX irrigation group had significant reductions in Gram negative facultative rods. Presented 1988 IADR

Continental European Division. Louven, Belgium.

Results:

1. Despite minimal effect on supragingival plaque, water irrigation benefits are significant (compared to normal oral hygiene):

- Reduction in gingival inflammation (-30.0%)

- Reduction in gingival bleeding (-44.9%)

- Reduction in Bleeding on Probing (-24.6%)

2. Irrigation delivery enhances the chemical effect of chlorhexidine over rinsing with it:

- Irrigating once per day with water then 0.06% chlorhexidine markedly enhanced improvement in gingival health.
- Irrigation with dilute chlorhexidine significantly reduced Actinomyces bacteria associated with gingivitis.

Chlorhexidine and Irrigation in Gingivitis: 6 months Correlative Clinical and Microbiological Findings.

6-MONTH RESULTS

T.F. Flemmig, M.G. Newman, S. Nachnani, et al. (UCLA, Los Angeles)

Study Summary: The objective was to evaluate the effect of irrigation with water or chlorhexidine (CHX) on gingival health and plaque microflora of 175 patients with naturally-occurring gingivitis. In this positive-negative controlled, examiner-blind study, 165 marginal/subgingival plaque samples were taken from 88 of the patients completing the 6 month trial. Microbiological analyses were performed using selective and non-selective culture methods.

Results: At 6 months, daily

advertising for Water Pik®, the research?

irrigation with water then 0.06% CHX (Group I) significantly reduced mean gingival inflammation by 42.5%, Bleeding on Probing by 35.4% and the total Colony-Forming Units of Gram negative anaerobic rods ($P \leq 0.02$) compared to toothbrush control. With 0.12% CHX rinse, mean gingival inflammation was reduced 24.1% and BOP by 15.0%. For both CHX irrigation and rinse groups, the Calculus Index was significantly increased while plaque was significantly reduced.

Daily water irrigation significantly reduced mean gingival inflammation by 23.1% and BOP by 24.0% at 6 months. There was no increase in supragingival plaque compared to Group IV.

In the small percentage of sites initially $>4\text{mm}$, GI was significantly reduced only by water irrigation (55.2%) and BOP only by CHX irrigation (38.2%) when compared to toothbrush control.

In the following tables, for sites with initial pocket probing depth $\leq 4\text{mm}$, GI and BOP were significantly reduced by all treatment groups; Group I irrigation was most effective in reducing BOP. ($P \leq 0.05$)

6 MONTH REDUCTION BLEEDING ON PROBING		
Adjunctive to toothbrushing		
Group I	CHX Irrigation	36.6%
Group II	Water Irrigation	26.0%
Group III	CHX Rinse	15.9%
Group IV	Toothbrush Control Comparison	

Presented 3/18/89 AADR.
San Francisco.

Effects of 6 Month 0.06% Chlorhexidine Gluconate Irrigation on Plaque Microflora

6-MONTH RESULTS

S. Nachnani, M. Newman, T. Flemmig, et al. (UCLA School of Dentistry, Los Angeles)

Study Summary: This study documents the bacteriologic effects on marginal and subgingival plaque in gingivitis patients who participated in a 6-month, positive/negative controlled, examiner-blind study. Curette plaque samples from sites in each of the four test groups were characterized using selective and non-selective culturing methods.

Results: At baseline, all patients harboured plaque microflora typical of naturally-occurring gingivitis. Only at 3 months were *Actinomyces* significantly reduced by CHX irrigation and rinse; at 6 months no significant differences were apparent, but the numbers of Colony-Forming Units were reduced for both CHX rinse and irrigations groups.

All treatment groups reduced CFU and proportions of black pigmented *Bacteroides* at 6 months.

Furthermore, CFU and percent of Gram negative anaerobic rods were significantly reduced at 6 months by irrigation with CHX.

At 6 months, the CFU of streptococci were similar for all four Groups.

Presented 3/19/89 AADR.
San Francisco.

Naturally, we think you should recommend the Water Pik Dental System to your patients. After all, the research shows the Water Pik Dental System to be effective in the enhancement of gingival health. Now we just have to see about the advertising.

For more information please write to:
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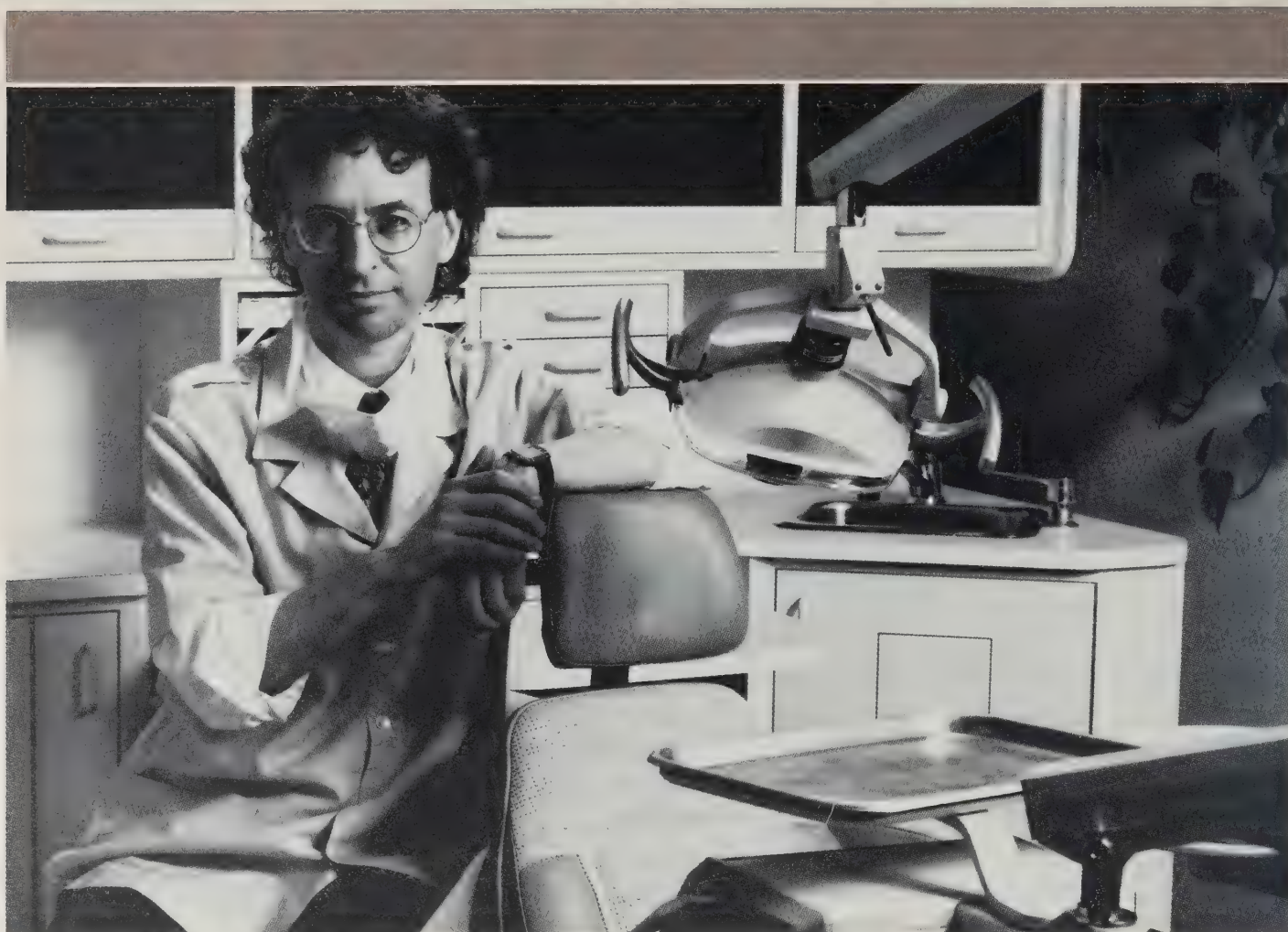
WaterPik

6 MONTH REDUCTION GINGIVAL INDEX

Adjunctive to toothbrushing

Group I	CHX Irrigation	48.0%
Group II	Water Irrigation	38.0%
Group III	CHX Rinse	28.7%
Group IV	Toothbrush Control Comparison	

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Temporomandibular Joint Disorders

Les dérèglements de l'articulation temporo-mandibulaire

1. Alsawaf, M. and others. "The relationship between condylar guidance and temporomandibular joint clicking." *Journal of Prosthetic Dentistry*. Mar 1989, v. 61, no. 3, pp. 349-54.
2. Bezuur, J.N. and others. "The recognition of craniomandibular disorders — comparison between clinical and radiographic findings in eighty-nine subjects." *Journal of Oral Rehabilitation* May 1988, v. 15, no. 3, pp. 215-21.
3. Bronstein, S.L. "TMJ arthroscopy." *TMJ Update*. Jan-Feb 1987, v. 5, no. 1, pp. 14-7.
4. Dahl, B.L. and others. "Signs and symptoms of craniomandibular disorders in two groups of 19-year-old individuals, one treated orthodontically and the other not." *Acta Odontologica Scandinavica*. Apr. 1988, v. 46, no. 2, pp. 89-93.
5. Gerke, D.C. and Richards, L.C., Goss, A.N. "Discriminant function analysis of clinical and physiological variables in temporomandibular joint pain dysfunction." *Australian Dental Journal* Feb. 1989, v. 34, no. 1, pp. 44-48.
6. Greene, C.S. and Laskin, D.M. "Long-term status of TMJ clicking in patients with myofascial pain and dysfunction." *JADA* Sept. 1988, v. 117, no. 3, pp. 461-5.
7. Harinstein, D. and others. "Systemic joint laxity (the hypermobile joint syndrome) is associated with temporomandibular joint dysfunction." *Arthritis and Rheumatism*. Oct. 1988, v. 31, no. 10, pp. 1259-64.
8. Hartley, M. "TMJ diagnostics alarm researchers." *Dentist*. Sept. 1988, v. 66, no. 5, pp. 8-10.
9. Hasso, A.N. and others. "The temporomandibular joint." *Radiologic Clinics of North America*. Mar. 1989, v. 27, no. 2, pp. 301-14.
10. Kaplan, P.A. and Helms, C.A. "Current status of temporomandibular joint imaging for the diagnosis of internal derangements." *AJR*. Apr. 1989, v. 152, no. 4, pp. 697-705.
11. Katzberg, R.W. "Temporomandibular joint imaging." *Radiology*. Feb. 1989, v. 170, no. 2, pp. 297-307.
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Dental Journal. Mar. 1988, v. 38, no. 1, pp. 19-27.

13. Knapp, J. and Bader, K.F. "Temporomandibular joint evaluation and reconstruction." *IMJ*. Dec. 1988, v. 174, no. 6, pp. 339-44.

14. Kopp, S. and Heraldson, T. "Skin surface temperature over the temporomandibular joint and masseter muscle in patients with craniomandibular disorder." *Swedish Dental Journal*. 1988, v. 12, no. 1-2, pp. 63-7.

15. Levitt, S.R. and others. "Initial studies of a new assessment method for temporomandibular joint disorders." *Journal of Prosthetic Dentistry*. Apr. 1988, v. 59, no. 4, pp. 490-5.

16. Levitt, S.R. and Lundeen, T.F. "The TMJ scale: quantitative measurements of symptoms and treatment results." *TMJ Update*. Sept.-Oct. 1987, v. 5, no. 5, pp. 77-80.

17. Mizumori, T. and others. "A study on diagnosis of stomatognathic function by the analysis of chewing movements." *Journal of the Osaka University Dental School*. Dec. 1987, v. 27, pp. 189-210.

18. Mosby, E.L. "Temporomandibular joint disorders." *Missouri Medicine*. Feb. 1986, v. 83, no. 2, pp. 89-92.

19. Myers, L.J. "Possible inflammatory pathways relating temporomandibular joint dysfunction to otic symptoms." *Cranio*. Jan. 1988, v. 6, no. 1, pp. 64-70.

20. Nielson, L. "Prevalence, interrelation and severity of signs of dysfunction from masticatory system in 14-16-year-old Danish children." *Community Dentistry and Oral Epidemiology*. Apr. 1989, v. 17, no. 2, pp. 91-6.

21. Rudy, T.E. and others. "An empirical taxometric alternative to traditional classification of temporomandibular disorders." *Pain*. Mar. 1988, v. 36, no. 3, pp. 311-20.

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23. Turner, S. and Lundeen, T.F. "Two case reports." *TMJ Update*. May-Jun. 1987, v. 5, no. 3, pp. 45-9.

24. Vandas, A.P. "Calm group. Prevalence of craniomandibular dysfunction in white children of different emotional states." *ASDC Journal of Dentistry for Children*. Nov.-Dec. 1988, v. 55, no. 6, pp. 441-8.

25. Vincent, S.D. and Lilly, G.E. "Incidence and characterization of temporomandibular joint sounds in adults."

JADA. Feb. 1988, v. 116, no. 2, pp. 203-6.

Library Acquisitions

Dawson, Peter E. / Evaluation, diagnosis and treatment of occlusal problems. — 2nd ed. — St. Louis, Toronto: Mosby 1989. 633 p.

Malamed, Stanley F. / Handbook of medical emergencies in the dental office. — 3rd ed. — St. Louis, Toronto: Mosby, 1987. 406 p.

Moyers, Robert E. / Handbook of orthodontics. — 4th ed. — Chicago: Year Book Medical Publishers, 1988. 577 p.

Roy Harris, Ruth / Dental science in a new age. Rockville, Maryland: Montrose Press, 1989. 476 p.

Cole, A.S. and Eastol, J.E. / Biochemistry and oral biology. — 2nd ed. — London, Toronto: Wright, 1988. 555 p.

Caplan, Carl M. / The handbook of letters and verbal response to patients for the dentist and staff. [Baltimore, MD. The author, 1989?] 115 p.

MacFarlane, T. Wallace and Samaranayake, Lakshman P. / Clinical oral microbiology. London: Wright, 1989. 284 p.

Newbrun, Ernest. / Cariology. — 3rd ed. — Chicago Quintessence, 1989. 389 p.

Oral mucosal diseases: biology, etiology and therapy: proceedings of the second Dows Symposium / edited by Ian C.

Mackenzie, Eric Dabelsteen, Christopher A. Squier. Denmark: Laegeforeningensforlag, 1987. 116 p.

McGinvey, Glen P. and Castleberry, Dwight J. / McCracken removable partial prosthodontics. — 8th ed. — St. Louis, Mosby, 1989. 525 p. Δ

One copy of the above package of articles is available for \$5.00 to all CDA members and for \$10.00 to non-members. (Ontario residents, please include 8% sales tax.)

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PERIODONTOLOGY TODAY

B. Guggenheim, editor

Karger, Basel, 1988
viii + 350 p.

Periodontology Today is the proceedings of a conference by the same name held in Zurich in May, 1988 by the European Research Group for Oral Biology.

The book has six sections: Anatomy and Physiology of the Periodontium Throughout Life, Epidemiology, Microbiology, Host Defence, Treatment, and Summaries of Panel Discussions. Thirty-two scientific papers are included along with five summaries-cum-discussion by panel moderators.

The papers are from five to 13 pages long and each is supported by up-to-date references. Some have titles posed as questions and this is indicative of the thrust of the conference — to determine whether current scientific knowledge of the various aspects of periodontology justifies certain conclusions. Often the answer is "no"; in other instances, additional questions are articulated that have surfaced in the course of the scholarly work and research.

The papers are well-written and informative and a few can be singled out for special mention. A highlight of the Host Defence section is Professor Per Brandtzaeg's discussion of the immune system and its involvement in the pathogenesis of progressive periodontal disease. He reviews basic immune mechanisms and reflects on the complex nature of periodontal host-parasite relationships and the sophisticated work that is still needed to explain these interactions.

Papers in the Epidemiology section are quite absorbing and deal with basic problems in defining and measuring periodontal disease, the shortcomings of applying epidemiologic data to the diagnosis and treatment of periodontal disease, and statistical analysis of data.

B.A. Burt's report of the status of periodontal epidemiological data, Jonathan Sterne's statistician's view of the application of statistical modelling to periodontopathy, and the discussion of clinical measurement validity and reliability by Per Gjermo and Jostein Rise provide insights into some of the problems and pitfalls encountered in analyzing and interpreting data in the periodontal literature.

The book's major shortcomings are its style and the lack of a subject index. The

papers are facsimiles of originals submitted by the authors; the print quality ranges from poor dot matrix to excellent laser and the citation style is inconsistent. The absence of a subject index is a significant handicap for the serious reader. In defence of the editor and publishers, the dispatch with which the book was published may well mitigate its shortcomings.

This book was reviewed by:
R.D. Oles, DDS, MS
College of Dentistry
University of Saskatchewan

CLINICAL RESTORATIVE MATERIALS AND TECHNIQUES

Kal F. Leinfelder and
Jack E. Lemons

Lea and Febiger, Philadelphia, 1988
359 pp

This book "is intended to meet the needs of both the dental student and the practising dentist for information about dental materials." It is organized into three main parts. The first part deals with the commonly used dental restorative materials and their evaluation. It begins with dental amalgam and includes a discussion of implant materials though surprisingly it does not illustrate the Branemark implant. This section occupies nearly two thirds of the book. The second part treats laboratory materials and techniques including casting and investments in about 60 pages. The final part considers several basic topics including physical and mechanical properties and the structures of ceramics, polymers and glasses. The book is copiously illustrated with many SEM micrographs. Some of the clinical photographs suffer from poor contrast however and have not reproduced well.

The book reflects the research interests and teaching interests of the authors. The earlier chapters on clinical materials generally are successful in relating clinical application to the properties and composition. There is some variability in approach. For example, the chemistry and setting of amalgam is discussed in detail as is that of elastomers but there is little such information on composites. The chapters on laboratory materials are clear and well illustrated though the emphasis is on techniques rather than basic understanding. In both of the first two sections there is little cross reference

to the structure-property discussions in the last section of the book. These latter chapters deal in an elementary way with the structures and properties of ceramics, polymers and metals and related technology. There is little on strain hardening, atomic diffusion fatigue and wear for example. A surprising omission is the absence of any specific discussion of biocompatibility except for techniques of clinical evaluation of restorations. There are no references in the text but a bibliography is given at the end of each chapter.

This book can be recommended as refresher reading for the practising dentist but would be useful mainly as supplementary reading for the dental student.

This book was reviewed by:
Dr. D.C. Smith
Professor and Head
Department of Biomaterials
Faculty of Dentistry
University of Toronto

PERSPECTIVES ON ORAL MANIFESTATIONS OF AIDS — DIAGNOSIS AND MANAGEMENT OF HIV — ASSOCIATED INFECTIONS

Edited by — P.R. Robertson
— J.S. Greenspan

Published by — PSG Publishing Co. Inc.
Littleton, Massachusetts
Price — \$25.00 (U.S.)

This relatively short, soft-bound book of 216 pages represents the proceedings from a symposium held in California in January, 1988. The purpose of the meeting was to provide a forum for knowledgeable individuals to offer perspectives on three aspects of AIDS. These were; the Diagnosis of HIV — Associated Oral Manifestations (Session I), the Management of HIV — Associated Oral Manifestations (Session II), and the Delivery of Care for HIV — Infected Patients (Session III). The compilation of the book is such that each session is clearly identified and consists of four to five lectures by a recognized authority on a pertinent subject. A report on the panel discussion which followed each series of lectures concludes each session. In addition the two editors offer introductory and closing remarks. Drs. P. Robertson and J. Greenspan must be congratulated for choosing this style which permits the reader to participate — albeit passively — in the symposium. Each lecture is presented in a

logical order with a clear, concise readable style complimented by appropriate clinical photographs, charts, and references.

The first two sessions are presented as nine essays or chapters. At the symposium these sessions were concerned with the diagnosis and management of HIV — associated oral manifestations. The necessary overlap of topics produces a fortunate duplication in the text which enhances and reinforces the information being communicated. The nine essays provide current information on AIDS in general, and upon the fungal, viral, bacterial and neoplastic diseases which may involve the oral tissues. The discussions on HIV associated gingivitis and periodontitis are particularly significant since their recognition and treatment are within the province of general practitioners. The prejudices expressed by Dr. Greenspan concerning the etiology, diagnosis and significance of hairy leukoplakia are readily forgiven. However his comments concerning the pathophysiology of the HIV reflect the *in vitro* situation — the *in vivo* mechanisms remain elusive.

Session III concentrated upon the delivery of care. It is presented in the book as essays upon; ethical considerations, legal implications, infection control, and educational challenges. The unexpected surprise of this text was the thoughtful, provocative and timely lecture by Dr. McCullough. His dissertation on Ethics is a reminder that dentistry is not only a science and a means to a successful livelihood but, more important, it is an opportunity to serve one's fellowman in his best interest. This chapter ought to be mandatory reading for all students and practitioners of dentistry.

The book (and obviously the symposium) has a paucity of information upon children and I.V. drug abusers with AIDS. This was recognized during the panel discussions and will no doubt be addressed at future meetings. Another omission is that the protocol for HIV — periodontitis treatment does not consider the effect of systemic therapy for HIV related opportunistic infections. A final adverse criticism is that Dr. Klein should have defined HIV positivity with regard to health care workers. It is not clear if the three workers who were HIV positive were tested for presence of the virus and therefore HIV-antigen positive, or for the antibody and hence HIV-antibody positive. If the latter was the case, it is possible that

the workers, who had no behavioral risk factors, could have developed protective antibodies and are not infectious. It will be essential to follow such persons. If they do not develop AIDS, the hysteria among non risk groups will lessen, while the need to identify essential promotion factors will increase.

In February 1988, Dr. C. Scully (one of the participants) reported on the symposium in the British Dental Journal. His account is succinct and comprehensive but fails to capture the ambience of the meeting. This the editors have succeeded in accomplishing. The choice of speakers, topics, and overall format of the book allows the reader to participate in what was a "state of the art" meeting regarding the relationship between AIDS and dentistry. The book is a worthy successor to the previous text "AIDS and the Dental Team" co-edited by Dr. J. Greenspan. This new book deserves to be read by all dental health care workers, and upon its publication, has become an essential resource for all personnel involved in the active care of people with AIDS.

This book was reviewed by:
Dr. John Hardie,
Chief of Dentistry
Ottawa Civic Hospital,
Ottawa, Ont.

AN ATLAS OF REMOVABLE PARTIAL DENTURE DESIGN

R.J. Stratton and
F.J. Wiebelt

*Chicago: Quintessence Publishing
Company 1988
336 Pages
800 Black & White Illustrations,
\$48.00 US*

This book is specifically an atlas of partial denture design and apart from tooth preparation does not address clinical procedures. The authors state that at the time of graduating, most dentists will have designed only 15-20 removable partial dentures in preclinical and clinical courses. This experience is not considered adequate preparation for the numerous partially edentulous combinations that may confront the clinician. The purpose of the atlas is to provide the dentist with a well organized and correlated bank of designs that may be drawn from. In meeting this challenge the authors adhere to conventional design concepts and this enhances the rationale of the book. The authors wisely caution that in presenting

design possibilities the designs must be seen in the context of biological diagnostic information gathered during examination of the patient.

The book is divided into two parts. Part I addresses design concepts and Part II is the design atlas. Part I is divided into nine chapters which deal with surveying, component design and mouth preparations. The chapter on surveying is not detailed and the chapter on mouth preparation deals only with tooth preparation. The remaining chapters in Part I describe component design and are reasonably comprehensive but not overly detailed. Part II, the atlas of design, accounts for two thirds of the book and is divided into eight chapters. The first four chapters deal with mandibular class I-IV designs and the last four chapters consider maxillary class I-IV designs. At the beginning of each chapter of the atlas, a table based on modification spaces and arch symmetry provides a key for the designs addressed. This makes it convenient for the reader to readily locate a partially edentulous arch to be designed. Each partially edentulous arch presented has a diagram of the favoured design. Specific information is also provided on the design of rests, guide planes, major connectors, minor connectors, retentive arms, denture base retentive elements and replacement teeth.

A list of selected references is provided at the end of the book. This list is arranged alphabetically by author. Location of references by topic is consequently made tedious. Regrettably the index is not adequately comprehensive. The book is well illustrated in clearly understandable line drawings. Considering the potential for frequent use as a reference book, it is unfortunate that the book was not more durably bound and printed on better quality paper.

There may be some concern about using this as an undergraduate textbook. With the availability of such a resource students may be reluctant to fully pursue a problem solving approach to removable partial denture design. This atlas of removable partial denture design will be of benefit to the practitioner, academic and dental technician alike and in this regard it comes well recommended.

This book was reviewed by:
John F. Wolfaardt, BDS, MDent, PhD
Associate Professor
Division of Removable Prosthodontics
University of Alberta
Edmonton

A GENTLE TOUCH IN CAVITY PREPARATIONS

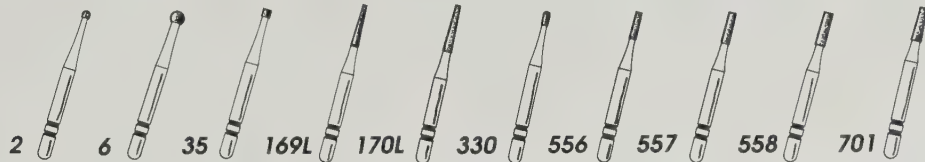
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This advertisement is directed to Canadian citizens and permanent residents of Canada.

The 'Gloves in Dentistry' controversy

Editor's Note: In September 1988, Oral Health published an article "Are we spreading AIDS by wearing gloves?" In a letter to the editor in the February, 1989, edition of the CDA Journal, Dr. John Hardie expressed his opinion regarding both the article and "original vs reprinted" material.

Dr. James Kerr, Chairman, Oral Health Editorial Board, has indicated his concern with Dr. Hardie's statements.

'Errors in statements'

With reference to your letter to the editor published in the Canadian Dental Journal (February 1989), I would like to point out that there are some errors in your statements and would like to clarify these.

The article we received for publication in the September (1988) issue of *Oral Health* was not accompanied by any comments from Dr. Gary Noble. Dr. Neiburger's article was not an abstract — it was a complete reprint of the original. And finally, the CDA Journal's "tradition of publishing original scientific material" has apparently changed. A featured article in the newly redesigned January issue, is a reprint.

In future, Dr. Hardie, we hope that you would write to *Oral Health* if you take exception to any of our editorial content. We do publish criticism, provided it is offered in a constructive way and your comments would always receive a courteous answer.

Most of the members of the Oral Health Editorial Board are also members of the Canadian Dental Association. We advocate productive and professional journalism and we work to keep our profession together in a positive way, with high editorial standards.

We would appreciate your retraction being printed.

James Kerr, Chairman,
Oral Health Editorial Board.

'One side of the argument'

The article by Dr. Neiburger as published in *Oral Health* did not include the references, without which, I consider any reprint to be incomplete, and therefore, an abstract. At the bottom of the references in the original publication there is a clearly identified editor's note directing attention to the rebuttal by Dr. Noble. By failing to publish Dr. Noble's comment, *Oral Health* — perhaps in ignorance — abstracted only one side of the argument, creating confusion among our colleagues, as evidenced by the subsequent letter from Dr. Roel J. Wyman in *Oral Health*, December, 1988.

I have for 10 years been advocating the routine use of gloves in dentistry. It is not surprising therefore, that I found Dr. Neiburger's article — as it appeared in *Oral Health* — to be a contradiction of the recommendations by respected authorities in the discipline of infection control. You may be interested to know that after recent presentations in Ontario, Newfoundland and Prince Edward Island, I have been approached by concerned colleagues expressing dismay and disappointment that *Oral Health* published such an article.

In December, 1988, I did express my sentiments on this matter in a letter addressed to the Editor of *Oral Health*. To date, the letter has not been published, nor have I received either a courteous answer or a simple acknowledgement.

The publication of articles in the *Journal of the Canadian Dental Association* is at the discretion of its Editor. Occasionally articles of a clinical nature and of outstanding value to the profession — as perceived by the Editor — will be reprinted from other sources. In no way does this jeopardize the *Journal's* tradition of publishing original scientific articles, of which more than 95 per cent originate from the Canadian Dental Community.

J. Hardie, BDS, MSC, FRCD(c)
Chairman, CDA Publications Committee

Input from specialty groups

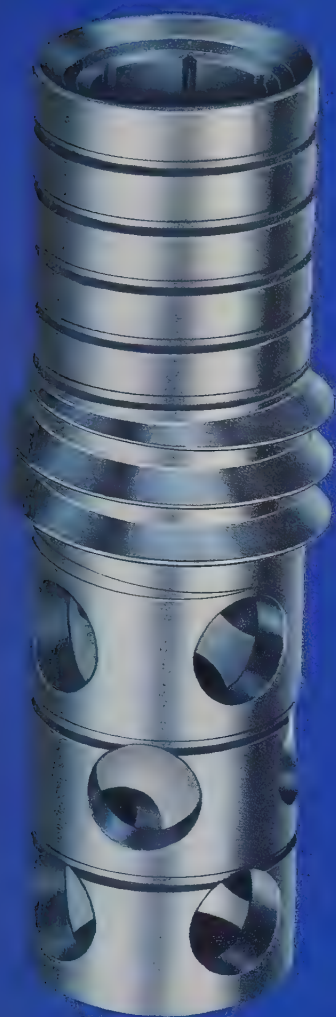
I have received the recent *CDA Journal* and noted that Endodontics is featured. In my enquiries, I found that neither Dr. William Christie our nominee, nor Dr. Barry Korzen whom we had selected previously as our specialty editor and whose name is listed on the mast head, was consulted or had any input into the preparation of this issue. (It should be noted that radiographs were upside down and an author's city was incorrect.)

Is this your concept of "input from the specialty groups"? And, Dr. Crawford, in your opinion, which specialty group are you consulting relative to endodontics in Canada?

Lorne A. Chapnick, DDS, Dip Endo, FRCD(C)
President, Canadian Academy of Endodontics

Editor's Note: The above is an excerpt from a Dr. Chapnick's letter. The *Journal* had no intention of slighting the CAE when soliciting articles for the April issue. The matter of Specialty Editors was in transition prior to the April issue and we accessed what to us was a "convenient route" — sorry.

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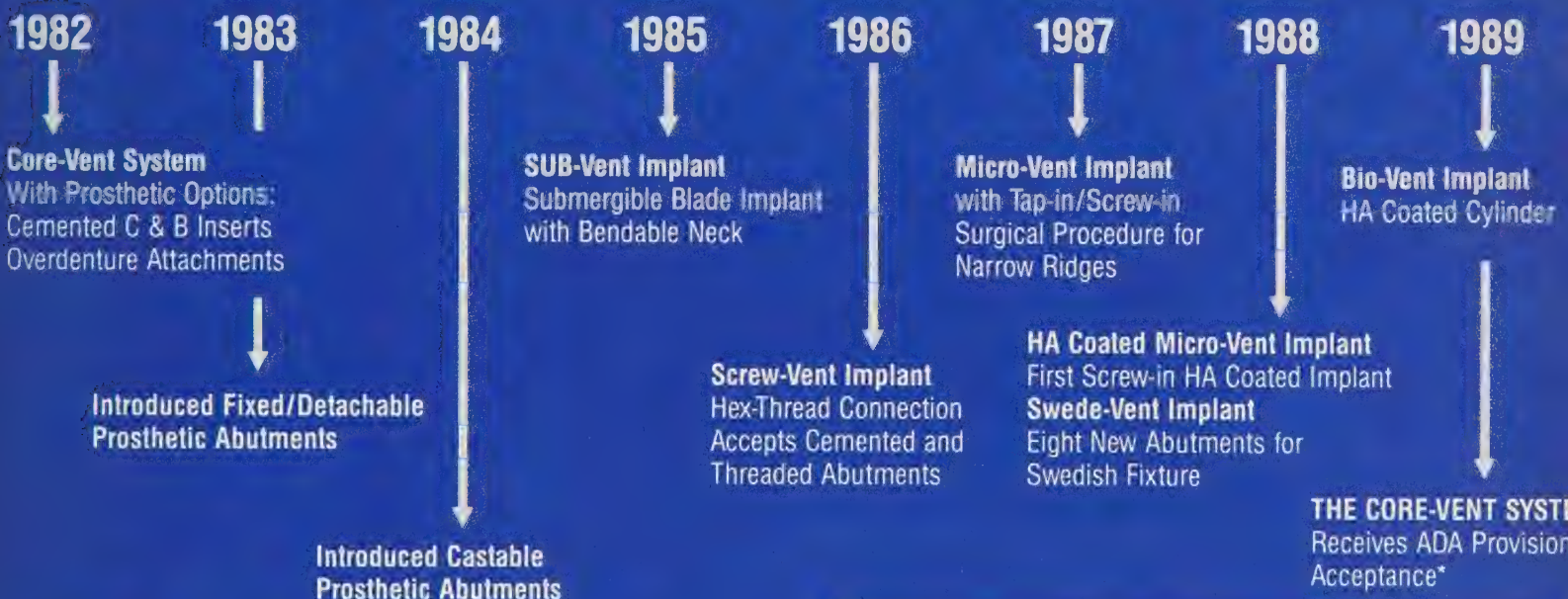


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THE DENTAL LABORATORY AND YOU

Willi Glas Crowns Eliminate the "Blue Gums" Phenomenon

By H.J. (Hyo) Maier, RDT*

With today's current porcelain technology, we can closely imitate the colour, form and texture of natural dentition. Yet, even the most esthetically pleasing porcelain-fused-to-metal crown can cause discolouration of the healthy tissues around both vital and non-vital tooth preparations.

The cause for this dilemma can be traced back to the prismatic and reflective nature of teeth themselves. In normal tooth structure, the enamel carries light into the dentin and the root, transilluminating the gingiva. This contributes to its pink colour. When a natural tooth is replaced with a restoration based on an opaque metal coping, the light is blocked from reaching the internal tooth structure, completely shadowing the root.

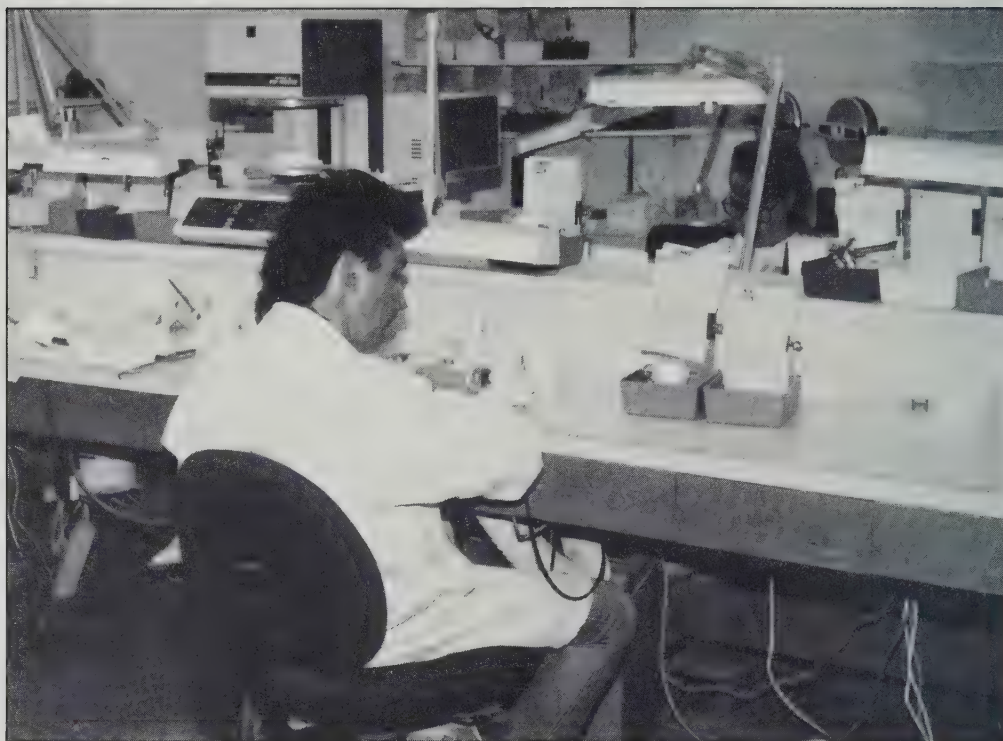
The "Blue Gums" phenomenon

This effect, often called the "blue gums" phenomenon, is responsible for the bluing or greying of the pink colour of the healthy gingiva. The extent of the effect can range from almost unnoticeable to especially severe with those patients who have darkened non-vital teeth containing post foundations. Fortunately, this phenomenon is only optical in nature.

Willi Glas solves the problem

Now, a new technique is available that provides superb esthetic results both as a restoration and in the tissue, even in heavily compromised situations.

In clinical use in Europe for over four (4) years, the Willi Glas Crown is the product of over a decade of development by Swiss Master Ceramist, Willi Geller (the father of today's porcelain layering techniques). Geller's procedure involves replacing the opaque metal coping with a Dicor substrate. This translucent material refracts and reflects light much like natural tooth structure.



(PHOTO BY C. METCALFE)

Photo: Courtesy of Classic Dental Laboratories, Nepean, Ontario, an affiliate of Aurum Ceramic of Calgary.

This substrate is then covered with an overlay of Vitadur-N porcelain, providing virtually unlimited control over colour, form, surface detail and special effects. The combination of these two materials results in a restoration that permits light transmission not only within the crown but also into and around the tooth preparation itself. With the crown's ability to carry light to the cervical and interproximal areas, the optical discolouration in the free gingival tissue disappears.

Superior esthetics

The Willi Glas Crown also offers tremendous esthetic flexibility. The crown can be designed and modified to reflect any or all of the variables of natural teeth. Subgingival form and contour can be carefully controlled, assuring a subgingival glass collar while the veneering porcelain is extended to or slightly below the crest of the gingival tissue for optimal esthetics.

Placement is simple

Willi Glas Crowns will be supplied to you by the laboratory already etched with a Silane coupling agent pre-applied. They are ready to be cemented in place with Dicor Zinc Phosphate Cement or bonded with Dicor Light-Activated Resin Cement. The cast glass margins of the Dicor substrate assures a precise fit.

Characterize at chairside

Once completed, the shade and value of a porcelain-fused-to-metal crown can only be modified with great difficulty. With the resin-cemented Willi Glas Crown, tints and opaques can be employed at chairside to alter chroma and value, if so desired. Even specific personalization of certain areas (eg. gingival stains) is easily accomplished.

The Willi Glas Crown — ask your dental laboratory for more information on this breakthrough in ceramic technology. Δ

* Mr. H.J. (Hyo) Maier, RDT is President of Aurum Ceramic/Classic Dental Laboratories Ltd.

Thousands of denture wearers will be making a permanent change.

NOVUS™, A NEW PERMANENT, SOFT DENTURE LINER.

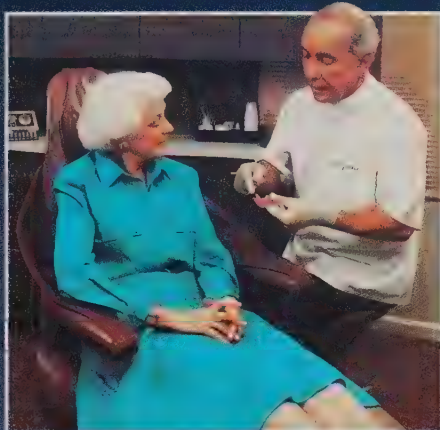
A New Permanent Resilient (Elastomer) Denture Base Liner for Long-Term Patient Comfort.

NOVUS™, a laboratory-processed soft denture base liner developed from a new high-tech, radiopaque Polyphosphazine Fluoroelastomer specially developed for use in dentistry.

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Controlled clinical studies, conducted since 1985 at Charity Hospital (Louisiana State University) and Northwestern University Dental School have proven the long-term benefits, reliability, and permanent resilience as well as patient appeal of the new NOVUS™ denture liner.



EASILY MACHINABLE

Chairside adjustments are easily and readily accomplished using standard operator instruments and materials.

FUNGISTATIC

Will not support the growth of fungus on the denture liner.

TASTELESS AND ODORLESS

The high density of NOVUS™, coupled with its resistance to fungus, alleviates foul taste, odors and discoloration with normal hygienic care.

SUPERIOR BOND STRENGTH

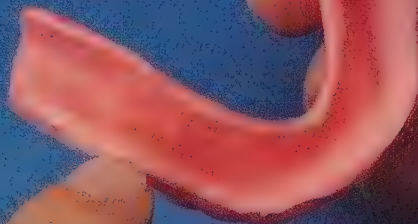
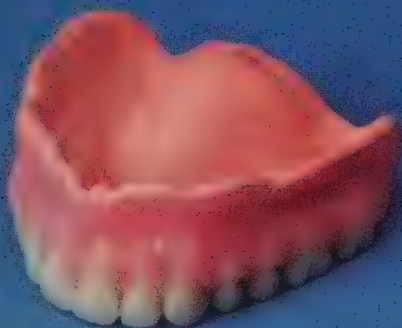
Bonds securely to denture acrylics, forming a permanent union.

PERMANENT RESILIENCE

No plasticizers are present, so NOVUS™ will not harden. Provides excellent shock absorbency with minimal shrinkage.

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The Braun pulsed Water Jet dislodges food particles.

The Braun Oral B Toothbrush has a specially shaped head and shaft.

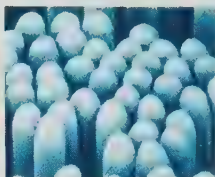
The Water Jet has an electronic pulse control to regulate precisely the pressure. It can tackle a variety of jobs – from dislodging and rinsing away food particles to massaging the gums.

The Rechargeable Toothbrush has a small brush head and slim shaft for comfortable interdental access. Using the approved technique of multi-directional brushing it provides 3,300 strokes per minute for thorough cleaning.

The Oral B filaments give effective plaque removal without gingival abrasion.



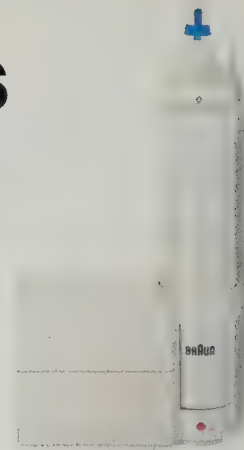
A competitor's head. Sharp filaments can cause lesions and lacerations.



*The Braun Oral-B head. Studies show rounded soft filaments clean gently but effectively.**

The Braun Waterjet and Rechargeable Toothbrush are available separately or as one compact unit. Your patients can find them in selected shops.

The Braun Oral Care System makes it easier for patients to follow your advice between check-ups.



The Braun D3 Rechargeable Toothbrush.



The Braun Dental MD3 Waterjet



The Braun OC3 Dental Centre.

BRAUN

The professional combination

Oral-B

*Source: Reithe P: Die Quintessenz der Mundhygiene. Berlin, Quintessenz Verlags GmbH, 1974 chap 7, pp 36-92

See you at our booth number 821.

Continuing Education

Continuing Dental Education

Sponsoring Institution Address	Location of Course	Title of Course	Subject Area	Date	Style	Instructor	Registration	Fee	Audience	Contact person/ Telephone
Dalhousie University Faculty of Dentistry Halifax, N.S. B3H 3J5	Halifax, N.S.	Risk/Benefits of Dental Amalgam vs. Current Alternative Materials	Operative Dentistry	Sept. 29	Lecture	Dr. Jack Gerrow Dr. Elliott Sutow	Open	TBA	GPs Specialists Assistants Hygienists	Kate MacDonald (902) 424-1674
Dalhousie University Faculty of Dentistry Halifax, N.S. B3H 3J5	Halifax, N.S.	Stress Management Personal Well being Program	Stress Management	Sept. 29, 30	Lecture	Dr. Mark Kent	Open	TBA	GPs Specialists Assistants Hygienists Lab. Technicians	Kate MacDonald (902) 424-1674
Dalhousie University and the Annapolis Valley Dental Association	Wolfville, N.S.	New Vistas in Crown and Bridge	Prosthodontics (Fixed)	Oct. 14	Lecture	Drs. Shaffner & Bannerman	Open	TBA	GPs Assistants Hygienists	Kate MacDonald (902) 424-1674
Dalhousie University Faculty of Dentistry Halifax, N.S. B3H 3J5	Halifax, N.S.	The Prosthodontic Aspects of Osseointegrated Implants	Prosthodontics (Fixed)	Oct. 20, 21	Lecture Participation	Dr. George Zarb		\$950 Tuition only	GPs	Kate MacDonald (902) 424-1674
Dalhousie University Faculty of Dentistry Halifax, N.S. B3H 3J5	Halifax, N.S.	Conscious Sedation – Nitrous Oxide	Pain Management	Nov. 1-5	Lecture Demonstration Participation	Dr. Steve Small & Associates		TBA	GPs Specialists	Kate MacDonald (902) 424-1674
Dalhousie University Faculty of Dentistry Halifax, N.S. B3H 3J5	Halifax, N.S.	Functional Orthodontic Appliances	Orthodontics	Nov. 3, 4	Lecture Participation	Mr. Peter Leech Dr. Andrew Thompson	Limited to 16	TBA	Lab. Technicians	Kate MacDonald (902) 424-1674
Dalhousie University Faculty of Dentistry Halifax, N.S. B3H 3J5	Halifax, N.S.	The Clinical Application and Handling of Selected Materials in Restorative Dentistry	Dental Materials and Devices	Jan. 12, 1990	Lecture Participation	Dr. Richard Price & Dr. Elliott Sutow	Limited to 16	TBA	GPs Assistants	Kate MacDonald (902) 424-1674
Dalhousie University Faculty of Dentistry Halifax, N.S. B3H 3J5	Halifax, N.S.	TMJ Disorders The Joint Approach	TMJ Disorders	Jan. 19, 20, 1990	Lecture	Dr. A. Elgeneidy & Dr. Andrew Thompson		TBA	GPs	Kate MacDonald (902) 424-1674
Dalhousie, McGill and Toronto Universities and the University of Alabama	Western Caribbean Cruise	Update in Dentistry	Dental Update & Cruise	Jan. 20-27, 1990	Lectures	Dr. Lewis Menaker, Coordinator	Open	\$300 DDS \$125 Aux.	GPs Specialists Assistants Hygienists Lab. Technicians	Kate MacDonald (902) 424-1674
Dalhousie University Faculty of Dentistry Halifax, N.S. B3H 3J5	Halifax, N.S.	Practical Review of Radiology for General Practice	Oral Radiology	Feb. 9, 10, 1990	Lecture	Dr. John Lovas, Dr. Michael Pharoah				Kate MacDonald (902) 424-1674
Dalhousie University Faculty of Dentistry Halifax, N.S. B3H 3J5	Mount Ste. Anne, Québec	Techniques for Achieving Excellence in Restorative Dentistry	Restorative Dentistry (Dalhousie Ski Seminar)	Feb. 21-25, 1990	Lectures	Dalhousie Dental Faculty Members		TBA	GPs Assistants Hygienists	Kate MacDonald (902) 424-1674
Dalhousie University Faculty of Dentistry Halifax, N.S. B3H 3J5	Halifax, N.S.	Clinical Techniques for Successful Crown & Bridge Restorations	Prosthodontics (Fixed)	April 6, 1990	Participation			TBA	GPs	Kate MacDonald (902) 424-1674
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	Toronto	Treatment Planning for Complicated Restorative and Prosthodontic Problems	Prosthodontics	TBA	Lecture Demonstration	Dr. George Zarb	Open	TBA	GPs Specialists	Jennifer White (416) 979-4503

Continuing Dental Education

Sponsoring Institution Address	Location of Course	Title of Course	Subject Area	Date	Style	Instructor	Registration	Fee	Audience	Contact person/ Telephone
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	Toronto	Dental Photography 1 Equipment and Technique Demonstration	Courses for Auxiliaries	Sept. 7	Lecture Demonstration Participation	Rita Bauer	Limited to 12	\$75	Hygienists	Jennifer White (416) 979-4503
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	Toronto	Osseointegration – Prosthodontic Aspects for the General Dental Practitioner	Prosthodontics	Sept. 21, 22	Lecture Participation	Dr. George Zarb	Limited to 50	Tuition only \$1,000	GPs	Jennifer White (416) 979-4503
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	Toronto	Orthodontics – Mandibular Assymetries Encountered in Daily Orthodontics Practice	Orthodontics	Sept. 29	Lecture Demonstration	Dr. D.G. Woodside	Limited to 24	Tuition only \$295	GPs Specialists	Jennifer White (416) 979-4503
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	Toronto	Orthodontics for the General Practitioner	Orthodontics	Oct. 12, 13 & 14	Lecture Participation	Dr. G. Altuna	Limited to 26	Tuition only \$595	GPs	Jennifer White (416) 979-4503
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	Toronto	Paediatric Dentistry – Evening Seminars (7 sessions)	Paedodontics	Oct./89 to April 1990	Lecture	Dr. Norman Levine	Limited to 20	GPs \$550 Aux. \$225 \$100 per GPs session Aux. \$50	GPs Specialists Assistants Hygienists	Jennifer White (416) 979-4503
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	Toronto	Continuing Education for Dental Hygienists Evening Sessions	Dental Hygiene	Oct./89 to April 1990	Lecture Participation	Mai Pohlak	Limited to 24	Tuition only \$350	Hygienists	Jennifer White (416) 979-4503
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	Toronto	CPR (Basic Rescuer and Recertification)	Emergency Dentistry	Oct. 20, Nov. 10	Demonstration Participation	Emergency Service Training Programs	Limited to 30	Tuition only \$70	GPs Specialists Assistants Hygienists Lab Technicians – other	Jennifer White (416) 979-4503
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	Toronto	Pharmacology Symposium	Pharmacology	Dec. 2	Lecture	Dr. Daniel Haas	Open	\$195 DDS \$100 Aux.	GPs Specialists Assistants Hygienists	Jennifer White (416) 979-4503
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	Toronto	Comprehensive Dentistry Program	General Dentistry	Jan. 1990 to Dec. 1991	Lecture Demonstration Participation	TBA	Limited to 24	Per Week-end session \$350 full fee \$8,400	GPs	Jennifer White (416) 979-4503
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	Toronto	Periodontology Symposium	Periodontics	Jan. 19, 1990	Lecture	Dr. E. Freeman	Open	\$295 DDS \$150 Aux.	GPs Specialists Assistants Hygienists	Jennifer White (416) 979-4503
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	China-Travel Program Dentistry in the Orient	Dentistry in the Orient		Feb. 9 to 26, 1990	Lectures	TBA	Open	\$395 Tuition only	GPs Specialists Assistants Hygienists Lab Technicians – Other	Jennifer White (416) 979-4503

Continuing Dental Education

Sponsoring Institution Address	Location of Course	Title of Course	Subject Area	Date	Style	Instructor	Registration	Fee	Audience	Contact person/ Telephone
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	Toronto	Photography in Dentistry	Dental Photography	Feb. 10, 1990	Lecture Demonstration Participation	Rita Bauer	Limited to 12	\$195 DDS \$150 Aux.	GPs Specialists Assistants Hygienists Lab. Technicians — Other	Jennifer White (416) 979-4503
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	Palm Springs California	Oral Surgery for the General Practitioner — Palm Springs Seminars	Oral and Maxillofacial Surgery	March 11-18, 1990	Lectures	TBA	Open	TBA	GPs Specialists Assistants Hygienists Lab Technicians — Other	Jennifer White (416) 979-4503
University of Toronto Faculty of Dentistry 124 Edward St. Toronto, Ont. M5G 1G6	Toronto	Endodontics — Evening Seminars	Endodontics	Oct./89 to April 1990	Lectures	Dr. B.H. Korzen	Limited to 20	\$100 per session \$550 for 7 sessions	GPs Assistants	Jennifer White (416) 979-4503
University of Western Ontario Faculty of Dentistry London, Ontario N6A 5C1	London, Ont.	Guiding the Developing Dentition	Paedodontics	Nov. 11	Lecture	Dr. Frans Currier	Limited to 35	\$250	GPs	Mrs. Najet Hassan (519) 679-2111 Ext. 6136
University of Western Ontario Faculty of Dentistry London, Ontario N6A 5C1	London, Ont.	Update on Composite Resin Bonding	Operative Dentistry	Nov. 12, 13	Lecture	Dr. M. Suzuki & Dr. R.E. Jordan	Limited to 20	\$395 (Tuition only)	GPs	Mrs. Najet Hassan (519) 679-2111 Ext. 6136
University of Western Ontario Faculty of Dentistry London, Ontario N6A 5C1	Saddlebrook — Golf & Tennis Resort Tampa, Florida	Silver Anniversary Symposium	Relax & Learn	Nov. 22-26	Lectures	Dr. Paul Sills Dr. Donald Gratton	Limited to 75	\$425 (Tuition only)	GPs	Mrs. Najet Hassan (519) 679-2111 Ext. 6136
University of Western Ontario Faculty of Dentistry London, Ontario N6A 5C1	London, Ont.	Crown & Bridge — Back to Basics	Prosthodontics	Dec. 1, 2, 3	Lecture Participation	Dr. Donald R. Gratton	Limited to 10	\$550 (Tuition only)	GPs	Mrs. Najet Hassan (519) 679-2111 Ext. 6136
University of Western Ontario Faculty of Dentistry London, Ontario N6A 5C1	London, Ont.	Update '90: "For Those Who are Current and Want to Remain Current"	General Dentistry	Jan. 27, 1990	Lecture	Dr. Gerald Z. Wright	Limited to 100	\$225 (Tuition only)	GPs	Mrs. Najet Hassan (519) 679-2111 Ext. 6136
University of Western Ontario Faculty of Dentistry London, Ontario N6A 5C1	London, Ont.	Removable Partial Dentures: Update	Prosthodontics (Removable)	TBA	Lecture Participation	Dr. Paul Sills	Limited to 24	\$450 (Tuition only)	GPs	Mrs. Najet Hassan (519) 679-2111 Ext. 6136
University of Western Ontario Faculty of Dentistry London, Ontario N6A 5C1	London, Ont.	Nitrous Oxide — Oxygen Conscious Sedation	Conscious Sedation	Feb. 22, 23, 24, 1990	Lecture Participation	Dr. I. Schofield & Dr. A.G. Parnell	Limited to 20	\$425 (Tuition only)	GPs	Mrs. Najet Hassan (519) 679-2111 Ext. 6136
University of Western Ontario Faculty of Dentistry London, Ontario N6A 5C1	London, Ont.	Dental Hygienists' Update	Dental Hygiene	TBA	Lecture	Dr. G.Z. Wright	Limited to 75	TBA	Hygienists	Mrs. Najet Hassan (519) 679-2111 Ext. 6136
University of Western Ontario Faculty of Dentistry London, Ontario N6A 5C1	London, Ont.	Medical Emergencies in the Dental Office	Emergencies	May 1990	Lecture Participation	Dr. L. George Upton	Limited to 20	\$250	GPs	Mrs. Najet Hassan (519) 679-2111 Ext. 6136
University of Western Ontario Faculty of Dentistry London, Ontario N6A 5C1	London, Ont.	Osseointegration in Clinical Dentistry	Prosthodontics	TBA	Lecture Demonstration Participation	Dr. David Charles & Dr. George Zarb	Limited to 30	\$1,000 (Tuition only)	GPs	Mrs. Najet A. Hassan (519) 679-2111 Ext. 6136

Continuing Dental Education

Sponsoring Institution Address	Location of Course	Title of Course	Subject Area	Date	Style	Instructor	Registration	Fee	Audience	Contact person/ Telephone
University of Manitoba 780 Bannatyne Ave. Winnipeg, Man. R3E 0W2	Winnipeg	Management of the Medically Compromised and Handicapped Patient in Dentistry	Dentistry for the Handicapped	Nov. 3, 4	Lecture	Dr. K. McCrae et al.	Open	\$200 (for both days)	GPs Specialists Assistants Hygienists	Mrs. Darcy Duggan (204) 788-6331
Continuing Professional Education Faculty of Dentistry University of Alberta 4063 Dentistry/ Pharmacy Bldg. Edmonton, Alta. T6G 2N8	Edmonton, Alta.	Clinical Management of Temporomandibular Disorders	TMJ Dysfunction	Sept. 22, 23	Lecture	Dr. Jeffrey P. Okeson	Open	TBA	GPs Specialists	Dr. S.K. Patterson or Ms. Debbie Grant (403) 492-5023
Continuing Professional Education Faculty of Dentistry University of Alberta 4063 Dentistry/ Pharmacy Bldg. Edmonton, Alta. T6G 2N8	Calgary, Alta.	Periodontics for the General Practitioner	Periodontics	Oct. 20	Lecture	Dr. Trevor Chin Quee	Open	TBA	GPs Specialists Assistants Hygienists Lab. Technicians – Other	Dr. S.K. Patterson or Ms. Debbie Grant (403) 492-5023
Continuing Professional Education Faculty of Dentistry University of Alberta 4063 Dentistry/ Pharmacy Bldg. Edmonton, Alta. T6G 2N8	Edmonton, Alta.	Periodontics for the General Practitioner	Periodontics	Oct. 21	Lecture	Dr. Trevor Chin Quee	Open	TBA	GPs Specialists Assistants Hygienists Lab. Technicians – Other	Dr. S.K. Patterson or Ms. Debbie Grant (403) 492-5023
Continuing Professional Education Faculty of Dentistry University of Alberta 4063 Dentistry/ Pharmacy Bldg. Edmonton, Alta. T6G 2N8	Edmonton, Alta.	Cardiopulmonary Resuscitation	Emergencies in the Dental Office	Oct. 28	Lecture Demonstration Participation	Canadian First Aid School	Limited	TBA	GPs Specialists Assistants Hygienists Lab. Technicians – Other	Dr. S.K. Patterson or Ms. Debbie Grant (403) 492-5023
Continuing Professional Education Faculty of Dentistry University of Alberta 4063 Dentistry/ Pharmacy Bldg. Edmonton, Alta. T6G 2N8	Edmonton, Alta.	Craniofacial Development and Dysmorphology	Basic Sciences	Nov. 4	Lecture	Drs. G.H. Sperber, G.A. Machin	Open	TBA	GPs Specialists	Dr. S.K. Patterson or Ms. Debbie Grant (403) 492-5023
Continuing Professional Education Faculty of Dentistry University of Alberta 4063 Dentistry/ Pharmacy Bldg. Edmonton, Alta. T6G 2N8	Edmonton, Alta.	Instrument Sharpening	Dental Hygiene	Nov. 22	Lecture Demonstration Participation	Ms. J.F. Pimlott	Limited	TBA	GPs Specialists Assistants Hygienists	Dr. S.K. Patterson or Ms. Debbie Grant (403) 492-5023
Continuing Professional Education Faculty of Dentistry University of Alberta 4063 Dentistry/ Pharmacy Bldg. Edmonton, Alta. T6G 2N8	Edmonton, Alta.	Third Molar Surgery in Dental Practice	Oral and Maxillofacial Surgery	Dec. 2	Lecture	Dr. B.K. Arora	Open	TBA	GPs Specialists	Dr. S.K. Patterson or Ms. Debbie Grant (403) 492-5023

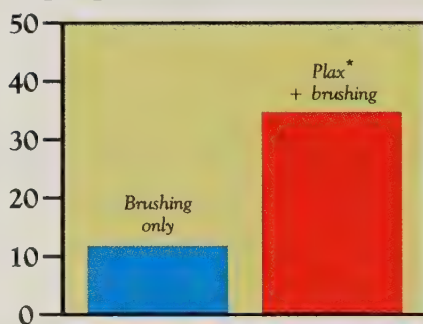
Continuing Dental Education

Sponsoring Institution Address	Location of Course	Title of Course	Subject Area	Date	Style	Instructor	Registration	Fee	Audience	Contact person/ Telephone
Sponsor: Division of Continuing Dental Education, Faculty of Dentistry, University of Alabama in conjunction with Faculty of Dentistry, University of Alberta	Western Caribbean	Update in Dentistry	Dental Update and Cruise	Jan. 20-27, 1990	Lectures	Drs. K.H. Compton, K. Leinfelder & Associates	Open	\$300 DDS \$125 (U.S.) Aux. Tuition only	GPs Specialists Assistants Hygienists Lab. Technicians – Other	Dr. S.K. Patterson or Ms. Debbie Grant (403) 492-5023
Continuing Dental Education University of British Columbia 105, 2194 Health Sciences Mall Vancouver, B.C. V6T 1W5	Vancouver	Sonics in Endodontics: A Clinical Participation Program	Endodontics	Sept. 23	Lecture Demonstration Participation	Dr. Kenneth L. Zakariasen	Limited to 40	TBA	GPs Specialists	Jane M. Wong (604) 228-2627
Continuing Dental Education University of British Columbia 105, 2194 Health Sciences Mall Vancouver, B.C. V6T 1W5	Vancouver	Advances in Osseointegration	Oral Rehabilitation	Sept. 30	Lecture	Dr. Torsten Jemt	Open	\$125 DDS \$75 Aux.	GPs Specialists Assistants Hygienists	Jane M. Wong (604) 228-2627
Continuing Dental Education University of British Columbia 105, 2194 Health Sciences Mall Vancouver, B.C. V6T 1W5	Vancouver	Hazards in the Dental Office	Infection Control	Oct. 21	Lecture	Dr. Joel Epstein Coordinator Dr. Jack Nicholls	Open	\$125 DDS \$75 Aux.	GPs Specialists Assistants Hygienists	Jane M. Wong (604) 228-2627
Continuing Dental Education University of British Columbia 105, 2194 Health Sciences Mall Vancouver, B.C. V6T 1W5	Vancouver	Ceramic Restorations: Analyzing the Alternatives	Operative Dentistry	Oct. 28	Lecture	Dr. Bruce Crispin	Open	\$125 DDS \$75 Aux.	GPs Specialists Assistants Hygienists	Jane M. Wong (604) 228-2627
Continuing Dental Education University of British Columbia 105, 2194 Health Sciences Mall Vancouver, B.C. V6T 1W5	Vancouver	Early Treatment in Orthodontics	Orthodontics	Nov. 18	Lecture	Dr. Jack Dale	Open	\$125 DDS \$75 Aux.	GPs Specialists Assistants Hygienists	Jane M. Wong (604) 228-2627
Continuing Dental Education University of British Columbia 105, 2194 Health Sciences Mall Vancouver, B.C. V6T 1W5	Vancouver	Osseointegration in Clinical Dentistry: Prosthetic	Oral Rehabilitation	Dec. 1, 2	Lecture Demonstration Participation	Dr. George A. Zarb	Limited to 40	\$750 (Tuition only)	GPs Specialists	Jane M. Wong (604) 228-2627

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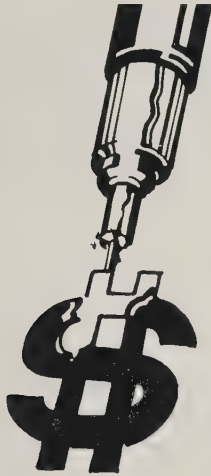
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The current federal budget: How it can affect dentists

Ron M. MacKenzie, BComm, CA *
Vancouver, B.C.

Finance Minister Michael Wilson presented his Budget Speech one day earlier than planned. Nevertheless, the proposals presented in the Budget Speech were presented to the House of Commons the following day. After due consideration and discussion it is anticipated that most measures will eventually become law. In this analysis, I have attempted to present information which may be of specific interest to members of the dental profession.

Surtax



- The 3 per cent surtax was to be increased to 5 per cent effective July 1, 1989.
- In addition, a new surtax of 3 per cent effective July 1, 1989 was to be imposed on federal tax greater than \$15,000. The new super surtax is imposed on the same amount of tax that is subject to the regular surtax. It will affect most taxpayers with taxable incomes in excess of \$70,000.

In view of the increasing taxes in 1990 and beyond, consider accelerating income in 1989 and deferring expenses.

Medical Expenses

- The budget has confirmed the Department of Finance Release of December 20, 1988 adding, amongst other items, the following as eligible medical expenses for 1988 and subsequent years:
 - cost of arranging and having a bone marrow or organ transplant



- the cost of structural modifications to a home for persons confined to a wheelchair, in order to gain access to and be functional within their home.

Part-time Attendants for Disabled

- Commencing in 1989, individuals entitled to the disability credit may deduct the costs of care provided by a part-time attendant who is an unrelated person and over 17 years of age.
- The deduction is limited to $\frac{2}{3}$ of the individual's "earned income" for the year up to \$5,000.

Universality of Social Benefits

While such programs as Old Age Security, Canada Pension and Family Allowances will continue to be available to all, and will continue to be taxable, the budget proposes the following changes:

Old Age Security and Family Allowances

- A special tax is introduced to recipients of such payments. The special tax will be limited to the lesser of the amount of such benefits included in the individual's income and 15 per cent of the amount of the individual's income over \$50,000.
- This special tax will be deductible from income.
- The \$50,000 threshold will be indexed after 1989 to the extent that the Consumer Price Index is greater than 3 per cent.
- The special tax will be phased in, starting in 1989, at $\frac{1}{3}$ of the above tax and $\frac{2}{3}$ in 1990.

RRSP and Other Retirement Savings



- The Department of Finance issued an information bulletin simultaneously with the budget papers stating that the provisions relating to retirement savings (including the larger contribution limits to RRSP and pension plans) have been deferred for one year. The new system of limits is to start in 1991.
- The paper also mentioned several points, the more important of which were:
 - effective January 1, 1989, lump-sum amounts may only be transferred from plan to plan on a direct plan to plan basis.
 - periodic payments of retirement income are not included in earned income for RRSP purposes after 1989 and, with one exception, may not be transferred between plans after 1989.
 - the exception is the transitional provision for a transfer of up to \$6,000 from an RPP or DPP to a spousal RRSP for the years 1989 to 1994.
 - the limitation of a retiring allowance transfer to \$2,000 per year of service will apply with respect to service after 1988 as originally proposed.

Accrued Investment Income



- Income from investments (including life insurance policies and compound interest bonds) acquired after 1989 will have to be reported annually. Currently, taxpayers must report such interest every three years and will be able to continue to do so on such investments acquired in 1989 or earlier, provided the term of the investment has been neither extended nor materially changed.

- Issuers of such investments will be required to report the accrued interest to the investor on T5 slips.

Consider purchasing compound interest investments in 1989 to take advantage of this last opportunity to defer income for three years.

Technical Papers

- The Minister of Finance announced that technical papers on the following issues will be released later this year. Although no further details were announced, we thought that their mention was significant:
 - deductibility of interest (particularly for debts outstanding after 1989)
 - available-for-use provisions of the capital cost allowance regulations.

Prescribed Interest

- Effective October 1, 1989, the formula for determining the prescribed interest rate (for unpaid taxes and refunds) will be increased by 2 per cent, making late or deficient instalments potentially more expensive than borrowing from commercial sources to pay taxes.

Federal Sales Tax

Federal Sales Tax measures pending sales tax reform are as follows:

- FST rates increase by one percentage point on:
 - alcoholic beverages and tobacco products (effective April 27, 1989);
 - telecommunications services (effective June 1, 1989);
 - construction materials (effective January 1, 1990);
- FST rate was to be increased by one and one half per cent (1 1/2 per cent) for all other taxable goods effective June 1, 1989;

Federal Sales Tax Reform

- The current Federal Sales Tax, which is imposed at the rate of 12 per cent on most imported and domestically manufactured goods, will be replaced on

January 1, 1991 by a new tax called the Goods and Services Tax ("GST"). The GST will be charged at a rate of 9 per cent and will be imposed on the vast majority of goods and services consumed in Canada.

- Although the rate of tax is lower, the base for the tax has been broadened considerably to include not only most goods but also services. Consequently, legal and accounting services, hairdressers, etc. will all be subject to the GST. Further, the GST will be administered not unlike the retail sales taxes operated by the provinces.
- There will be at least three categories of goods and services for purposes of the GST. These are:
 - tax free goods and services, which contain no GST, e.g. basic groceries, prescription drugs and medical devices;
 - tax-exempt goods and services, which include GST in their cost but the final consumer does not pay any GST, e.g. residential rents, child care, legal aid and most health, dental and educational services;

At press time, the budget proposals had not been enacted. However, based on a government majority, it is almost certain that legislation will be passed. Now, more than ever, all taxpayers must accept the fact that taxes continue to play an increasing part of our lives in every day decisions, both professionally and personally. Based on my practice experience with my clients, it is equally important to accept and plan for the payment of income taxes at the appropriate time and in the appropriate amount, as it is to properly minimize taxes. With increasingly stiffer penalties arising from reassessments, interest penalties on deficient instalments and arrears, it is important that proper tax planning and consideration as well as timing of payments takes place on an on-going basis. Δ

* Mr. MacKenzie is a chartered accountant, and a partner in the Vancouver office of BDO Rolfe, Benson. His preferred area of practice is with the members of the medical and dental professions. In addition to writing articles, Mr. MacKenzie is an occasional contributor to this journal.



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When a parent dies we lose our past; when a spouse, or a very close friend dies, we lose our present; when a child dies, we lose our future. Past, present, future: each conjures up a massive amount of time, energy, commitment. Each is so integral to what we are that it is difficult to imagine any one of them being dissolved at the end of a single exhalation. When it happens, the rending asunder can leave us literally struck dumb.

A protective emotional anaesthesia eases us through the first few days after a death. We breathe, move, and function in a blessed unreality. We hear, speak, act, but inside our heads the scene is foggy: this can't be me because I don't feel anything . . . I'm talking down a hollow tube . . . I had trouble deciding . . . what was I trying to remember . . . I think someone is with the children . . . lots of people at the funeral . . . is to-morrow Monday . . . I have to go to work . . . things seem strange . . . I am floating through these crowds . . . who's at the hospital . . . what do I do now . . . who are you? . . .

Usually within a few days the freezing wears off, and the truth can be seen and felt. This is not a dream. I am walking around in my life with a gaping wound inside me and I can't hold it together, and please, it hurts. Suddenly the poet's lines fit:

Grief tears his heart and
drives him to and fro
In all the raging impotence of woe

Those words are my truth. There is none but me to bear my dreadful grief, and nothing I can do but bear it. There is no use asking "why" because no explanation will make my wound close over or go away. ***I need to feel it; here and now. I have been deeply hurt and therefore I should hurt deeply. There is no way I can carry on as if nothing has happened.***



Mary E. Toombs, BScN, MEd, Winnipeg

Anguish and the Dentist

The above description of the anguish of grief may seem incongruous for a bereaved dentist. Usually a dentist is seen as one who is gentle, genteel, who daily receives people who do not want to see him. He smiles as he welcomes them. He wears a smooth white coat of affability during his working day. He works conscientiously. There is seldom any wish or opportunity to be open or expressive. After work the professional facade may shift a little, some tension may be released, but his demeanor is matter-of-fact, with few signs of an inner life allowed to come to the surface. But if he is cut, he bleeds.

When death walks into our lives without an appointment we may try to be our usual calm selves, but we find it difficult. Our dental education did not prepare us for the psychological trauma of a major personal loss. We did not expect death to come so near, so soon, and under the cool exterior we may feel unexpected stirrings of rage and despair and helplessness. If we can sense and accept these as our responses to the tragedy, we are fortunate. ***These feelings must be dealt with:*** we can let ourselves be in them,

and go through them to healing; ***or we will meet them months down the road in a guerilla attack, which will be more devastating the longer they have had to stake out their ambush.***

First aid for physical shock is to keep the patient warm and as still as possible. So here, we need people near us for warmth, reassurance, help; we will need protection from others who want to move us this way or that. We rest where we are, keeping warm in the knowledge that what we are going through is nature's way of working through a loss; this is where the healing of a broken heart begins. There are no paths around grief. Our survival lies in giving ourselves permission to grieve, to move through the process at our own pace, with our own reactions.

Physical Symptoms

Now fully aware of our pain, we may have intermittent physical symptoms such as palpitations, headaches, insomnia. There may be spells of crying. There can be confusion, and erratic mood changes. In these early days we need at least one person we can be close to, who will listen, not advise, whom we can call at any time to say: "I hurt. I don't know if I can make it". This is harder for men, as they tend to have buddies, not intimates. They do find it easier to carry on with their work, but the mourning process must still be given room. Finally there will come a day when we are able to face it: our loved person is dead, really dead, not lost, not passed away, or gone to his/her reward. He/she has DIED, and we have SURVIVED.

Having faced that reality, now we begin to react to the death with more than sadness. There may be anger at the loved one (previous anger was probably at the Doctor, the hospital, God, the other driver). We ask the deceased: "How could you do this to me?". We shout: "I'm angry at you for going off and leaving me". Or we may turn the anger inward as guilt, a destructive way of com-

* First North American Serial Rights.

ing to terms with intense feelings. It is usually not based in reality, but is a way of blaming someone, (us), for what has happened. **Chastising ourselves only adds an extra burden to our pain, and wastes precious energy needed for healing and growth.** Eventually anger, guilt and depression do lessen, may be integrated, and we move on.

As we earlier gave ourselves permission to grieve, now, a few weeks or months later, we give ourselves permission to get well. Healing requires both choice and will. Perhaps we notice ourselves feeling better for a couple of days so we join friends for dinner for the first time, and enjoy ourselves. But when we return home, the house feels really empty, and we may be overcome again with grief. This is normal, particularly if we have done something the deceased used to enjoy. Our aloneness is sharpened, but there may also be a new guilt, because we have gone away and left our loved one alone. When we take pleasure in living again, we are not being unfaithful or leaving the dead behind. They are with us in our memories, and no activity of ours is going to alter the present situation. With each such laborious step we move forward into a new day, and survive.

The new day means moving into life alone, changing it to reflect our own interests and life style. One man's adult children were upset when he changed mother's colours in the kitchen. He gently reminded them that mother was no longer here, so he was making decisions on his own. He had also been able to go through her possessions, removing most of them, only keeping mementos of their life together which had meaning for him. The home did not need to be a shrine for him to remember her. He was now ready to say good-bye to what had been, and hello to growing as an independent person. Recovering is not an act of disloyalty to the one who has died. It is important to strike a balance between a "yesterday which should be remembered, and a tomorrow that must be created."

One Day at a Time

When grieving, we live one day at a time, and each day's survival is a triumph. Our stressed-out bodies and minds need rest but also activities to help us out of ourselves and back into the world. We need our friends, family and work to maintain people contact. **The final outcome of the grief process will depend on our own set of givens: our coping skills; our**

ability to recognize our need for help, and to ask for it; our knowledge of resources available; the number and nature of other relationships; our relationship to the deceased, and the age of the person who has died.

When a parent dies, we lose our past, and know that we are next in line. When a spouse or a close friend dies, we lose our present, dismembered or abandoned. When a child dies we lose part of our future, bereft of all that child might have been. Such heartbreaks can, with painful struggle, be woven into our lives, and there comes a day when we know the worst is past. It might take more or less time than we expect, but it is our time to take. We are survivors, and we have a right to survive in the way and at the pace which is best for us. We will be healed when we can think of the one who died without falling apart, and with fond memories which are accepting and realistic. "He was a good guy, most of the time. But he could make me mad, too. I miss him. He was my Dad". At that point we take our lives back into our own arms. △

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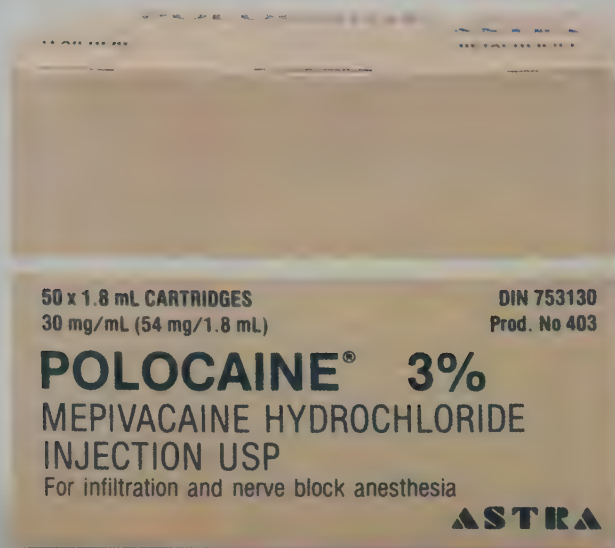
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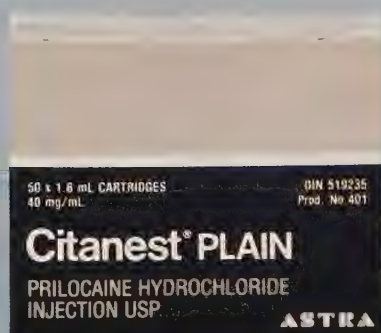


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First year enrolment of Canadians in North American dental schools

by
Ian C. Bennett, BDS, DDS, MSD
and
Marcia A. Boyd, DDS, MA

ABSTRACT

Data is presented relating to the number of students admitted to the first year classes of Canadian dental schools for the period 1974 through 1988 and projections for 1989. Additional data showing the number of non-Canadians in Canadian dental schools and the number of Canadians enrolled in the first year of United States dental schools is included. The study concludes that the number of Canadians in North American dental schools has not decreased but has actually increased over the last five years. Also, since there is a significant number of Canadians studying dentistry in the United States, there will probably be increased pressure to change the policies of the National Dental Examining Board of Canada presuming that these Canadians will return home. Further data is presented which leads to the conclusion that the proportion of admitted students who graduate as dentists has remained fairly constant over the study period.

There has been considerable interest in the Canadian dental profession regarding the number of students admitted to Canadian dental schools. This paper is intended to provide definitive information regarding the size of the first year classes for the past 15 years and also to provide some further information and observations relating to licencing and data collection which are considered relevant to the matter.

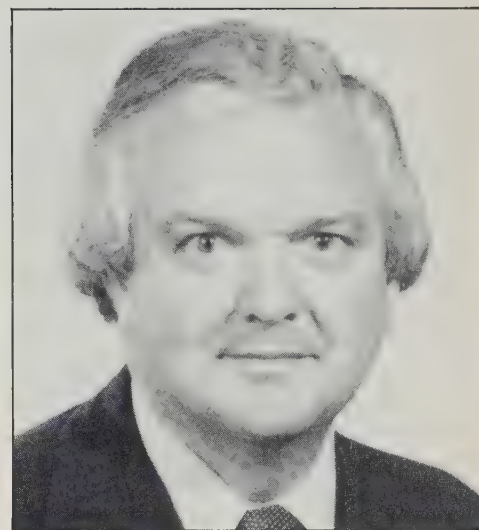
Each year all Canadian dental schools are expected to complete an Annual Survey of Dental Education form. This survey form is prepared and sent by the Division of Educational Measurements of the Council on Dental Education, an arm of the American Dental Association. The information provided by the dental schools in Canada and the United States is returned to Chicago, tabulated and published as the Annual Report on Dental



Education, usually with several supplements. Copies of the survey forms are also sent to the Canadian Dental Association to provide information to assist in the dental school accreditation process.

While it is very unusual for American schools to fail to provide all of the information requested, the response from Canadian schools has frequently been incomplete. This may be due to: 1.) difficulty in providing financial information in the format required by the survey, 2.) the time consumed in completing the forms, 3.) the need to change the school's information recording system in order to answer some of the questions. Recently the Council on Education and Accreditation of the Canadian Dental Association has made completion of the annual survey forms a requirement for accreditation of DDS/DMD programs and at the same time has worked with the American Dental Association to make the forms more suitable for use by Canadian schools.

This change was made in order to maintain the reciprocal accreditation arrangements which have existed for some time whereby Canadian dental schools accredited by the Canadian Dental Association are reciprocally recognized as accredited by the American Dental Association and



vice versa. This arrangement has considerable advantage for Canadian dentists wishing to practice in the United States or to pursue advanced education in those U.S. programs which require graduation from an accredited school for admission.

A major advantage of this change in accreditation requirements is that it provides a more complete data base relating to Canadian dental education which becomes an invaluable resource when planning and decision making are required by the individual schools or the profession as a whole.

Most of the information contained in this paper was obtained from the Annual Report on Dental Education for the 15 year period 1972-73 to 1986-87.¹ Where information was incomplete the individual school was contacted directly in order to obtain the necessary information. Some minor gaps still exist, but they are not considered significant enough to affect the conclusions derived from the data. The importance of adequate and accurate information which can be readily available to decision makers can hardly be overstated. While much of the information contained here is available in most university medical or dental libraries, there were voids in the data which were filled with the generous help of many

individuals at their institutions. Perhaps if the information requested in the annual surveys of the past 20 years had been provided when requested, the task would have been easier and possibly more accurate. The Association of Canadian Faculties of Dentistry and the Council on Education and Accreditation of the CDA have recently taken a stronger stand on the importance of accurate information and the future appears to be brighter in the sense that timely information will be available. Better and more complete information on patient care needs and demand as well as availability of dental services, continues to be an unresolved problem.

Data Base

Table 1 shows the actual first year enrollment for the 10 Canadian dental schools for the period 1974 to 1988. Also shown are the best estimates available of the intended enrolment for the academic year 1989. It should be noted that the actual figures include a very small number of students who were repeating the first year program at some of the schools and these students are therefore counted twice. Sometimes there were discrepancies between enrolment figures provided by the schools directly to the authors and those provided to the ADA. The differences were always very small and were probably caused by the use of different reporting dates i.e. the difference between the number of students on the first day of the program and the number six or so weeks later, the cut-off date set by the ADA for the annual survey.

It can be seen that the first year enrollment increased from a low of 488 in the

fall of 1974 to a high of 514 in the fall of 1982. The principal changes in individual schools which occurred during this period were:-

- (a) The University of Saskatchewan grew from the small classes of the early years of its program to a high of 25 followed by a small reduction to 21 which has become the norm for that school.
- (b) The University of Toronto decreased from 128 to 120, preliminary to much greater reductions later.
- (c) Laval University grew from the small classes of 16 during the early years of the program to 36 in 1981 on the way to an even larger size later.
- (d) Dalhousie University changed from its long established size of approximately 25 to a class size of 40 as new facilities were built.

For the next six years there was a steady but small decline from the high of 514 in 1982 to 471 first year students in 1988, or a reduction of more than 8 per cent. The principal changes in individual schools which occurred during this period were:-

- (a) The University of Manitoba, which had maintained a class size in the mid-to-low thirties for many years adjusted to a class size of 27 by 1988.
- (b) The University of Western Ontario changed its entering class from 56 to 40, a reduction of almost 29 per cent.
- (c) The University of Toronto made a further reduction in its enrolment from 120 in 1982 to 105 in 1988, a 12 per cent reduction or 18 per cent reduction from the high of 128 in the early seventies.
- (d) Laval University increased its enrolment from 35 in 1982 to a high of 51 in

1986 followed by a reduction to 45 in 1988, almost 12 per cent below their peak size.

- (e) Dalhousie University reduced its recently established size of 40 to a class size of 32, a 20 per cent reduction.

Table 1 also shows projected figures for 1989 which are based on statements made during discussions of manpower needs in Canada between the Deans Committee of the Association of Canadian Faculties of Dentistry (even before it was formally constituted) and representatives of the Canadian Dental Association.⁵ Significant projected changes in this period are:-

- (a) The University of Toronto planned to change from 105 in 1988 to 64 in 1989. This would be almost a 50 per cent reduction from the former enrollment of 128.

- (b) McGill University downsized from 40 in 1987 to 25 in 1988, a reduction of almost 38 per cent from its former size.

If the changes which were discussed do in fact occur the first year class size would have been reduced by 86 places between 1982 to 1989. This would equate to the closing of two average size Canadian dental schools as they would be in 1989. It is also more than the equivalent of closing the three smallest schools as they existed in 1988.

Table 2 shows the number of non-Canadians enrolled in the first year of Canadian dental schools in the study period. It can be seen that the numbers have always been small and have decreased in recent years. This change is probably caused by the major reduction in the applicant to first year place ratio in the United States and the increased availabil-

TABLE I

First year enrolment in Canadian dental schools

UNIVERSITY	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
BRITISH COLUMBIA	40	40	40	40	40	40	40	40	40	40	40	40	40	40	41	40
ALBERTA	50	50	50	51	50	50	50	51	51	50	52	49	50	50	50	50
SASKATCHEWAN	15	21	20	21	24	25	25	23	21	21	21	21	21	21	21	21
MANITOBA	34	31	33	33	33	33	25	28	26	30	30	31	26	26	27	25
WESTERN ONTARIO	56	56	56	56	56	56	56	56	56	55	40	40	40	40	40	40
TORONTO	125	128	128	128	128	128	128	120	120	104	104	104	105	105	105	64
MONTREAL	85	85	85	86	85	85	85	85	85	85	85	85	85	86	83	85
McGILL	42	44	41	39	38	39	39	40	40	40	40	40	40	40	25	25
LAVAL	16	24	24	24	25	24	24	36	35	36	39	41	51	45	45	46
DALHOUSIE	25	25	27	25	24	24	24	32	40	41	41	40	40	32	34	32
TOTAL	488	504	504	503	503	504	496	511	514	502	492	491	498	485	471	428

TABLE II

First year enrolment of non-Canadians in Canadian dental schools

YEAR	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
UNIVERSITY															
BRITISH COLUMBIA	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
ALBERTA	0	0	1	3	0	1	1	2	0	0	0	0	1	1	0
SASKATCHEWAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MANITOBA	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN ONTARIO	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
TORONTO	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
MONTREAL	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
McGILL	2	0	1	0	0	2	2	3	1	1	3	1	1	0	0
LAVAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DALHOUSIE	0	0	0	1	1	2	0	0	0	2	0	2	1	1	0
TOTAL	7	0	5	5	2	5	4	5	2	3	3	3	3	2	0

ity of dental education in other countries for Commonwealth students.

Please note that this paper does not address the issue of Canadians who attend Dental Schools in parts of the world other than North America. No reliable information could be found about the numbers in other countries although it seems likely that some Canadians, especially those with family or military connections in Europe, might attend dental school in the place of their family origin or in some other location outside North America. If there are any Canadian dental students outside North America the numbers of Canadians in the first year of dental programs would be more than those reported here.

Table 3 shows some further information regarding first year enrolment of Canadians in North American dental

schools. The first row shows the total enrolment in the Canadian schools for each year of the period studied (derived from Table 1). The second row shows the number of non-Canadians enrolled in each of these years, (derived from Table 2) and the third row shows the number of Canadians enrolled in the first year of dental schools in the United States. The next row shows the net number of Canadians enrolled in North American dental schools. This is the Canadian dental school first year enrolment minus the number of non-Canadians in Canadian schools plus the number of Canadians enrolled in U.S. Schools. It can be seen that the numbers of Canadians enrolled in the first year of dental school in North America changed from 484 in 1974 to 503 in 1984 (a 4 per cent increase in 10 years). However over the four year

period 1987 to 1988 there has been a further 9 per cent increase from 503 to 547. This illustrates an accelerated growth of Canadians in North American dental schools primarily accounted for by increasing enrolment of Canadians in U.S. dental schools.

Table 3 also shows the total number of graduates from the Canadian dental schools at the "normal" graduation time i.e. four years after the classes were admitted in nine of the schools or five years after admission in the case of the University of Saskatchewan. Note that they are not necessarily the same individuals since attrition and advanced standing admissions could change the composition of the classes. The percentage of the class admitted four (or five) years before which graduated is also shown. It can be seen that the graduating

TABLE III

Net enrolment of Canadians in North American dental schools

YEAR	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
FIRST YEAR ENROLMENT IN CANADIAN SCHOOLS	488	504	504	503	503	504	496	511	514	502	492	491	498	485	471
NON-CANADIANS IN CANADIAN 1ST. YEAR	7	0	5	5	2	5	4	5	2	3	3	3	3	2	0
CANADIANS IN 1ST. YEAR OF U.S. SCHOOLS	3	0	7	0	2	4	6	9	13	3	14	27	25	56	76
TOTAL CANADIANS IN 1ST. YEAR OF NORTH AMERICAN SCHOOLS	484	504	506	498	503	503	498	515	525	502	503	515	520	539	547
GRADUATES AT END OF NORMAL PROGRAM	454	456	482	477	482	497	448	485	481	462	452				
% OF CLASS ENTERING	93%	90%	96%	95%	96%	99%	90%	95%	94%	92%	92%				

groups have remained close to the 95 per cent mark over the years. Whether this is because students and the academic program remained about the same, or that a lowering of student quality combined with an easier program, or better students in a more rigorous academic program, or other factors, is not known and can only be speculated upon.

Discussion

The principal reasons for the increase in the numbers of Canadian students in the first year classes of dental schools in North America are the reduced number of non-Canadians attending Canadian schools and the increasing number of Canadians attending U.S. schools. The most significant change has come in the number of students from Ontario being admitted to dental schools in Detroit and Cleveland. Over the study period there has been a major decline in the number of applicants to U.S. dental schools to the point where, in spite of a change in the U.S. from 6,301 first year places in 1978 to 4,196 first year places in 1988, (a reduction of over 33 per cent), there are only approximately 1.1 new entrants to the applicant pool for each existing first year place.²

This has led to major difficulties for some U.S. schools in filling their first year classes, most notably within the private school sector where tuition fees are higher. It is not surprising that these schools would encourage applicants from Canada and admit significant numbers of those who apply. This becomes an expensive solution for the Canadian student who attends a U.S. dental school. Tuition fees in 1987-88 at the University of Detroit were \$13,750 for all students compared with \$1,718 for residents and \$7,557 for non-residents at the University of Western Ontario. Fees were \$18,125 for all students at Case-Western Reserve University in Cleveland compared with \$1,718 for residents and \$8,103 for non-residents at the University of Toronto. All of these figures are expressed in Canadian dollars at an exchange rate of US\$1.00 = Can\$1.25.

The willingness of large numbers of Canadian students to attend dental schools in the United States as well as Canada is presumably related to a differing perception, by these students and their parents, of the future of the dental profession than that seen by most dentists in both the United States and Canada and many of the potential dental students of the United States. While this situation may change in the future, the

relatively stable numbers of Canadians in North American Dental schools has, to a large extent, counterbalanced the successful efforts of the Canadian Dental Association to persuade several of the Canadian dental schools to reduce their enrolment.^{3,4,5}

The potential for a significant number of Canadian citizens wishing to return to their home country to practice dentistry is also likely to put pressure on the National Dental Examining Board of Canada to end the current requirement that Canadian graduates of U.S. dental schools perform the licencing examinations of the NDEB. At the present time, graduates of accredited Canadian dental schools are able to obtain an NDEB Certificate based on successful completion of examinations conducted during their undergraduate program and subsequent payment of a fee.

The NDEB is able to use this mechanism because it supports and participates in the accreditation process and therefore has confidence in the overall competence of the graduates of accredited Canadian programs. Obtaining an NDEB Certificate allows graduates of Canadian DDS/DMD programs to become licenced in most provinces without further examinations. The CDA and the ADA reciprocally recognize the accreditation process and the decisions made as a result of the process as valid in the other country. Graduates of U.S. dental schools are required to perform NDEB examinations in order to obtain a certificate. Graduates of both U.S. and Canadian dental schools, however, do have to perform a Regional or State Board Examination, similar in many ways to the NDEB examinations, in order to be licenced in virtually any jurisdiction of the United States.

Past experience in the United States with offshore medical education led to significant political action by the physicians trained abroad (and their families) and caused major changes in educational and licencing requirements in many States. It might be wise for the NDEB to reconsider its current position. Rather than considering graduates from the United States as the equivalent of graduates from outside North America, the recognition by the NDEB that graduates of schools reciprocally accredited by the CDA, through the ADA, are equivalent to graduates of Canadian schools, could be the basis of a modification of the current system. The absence of a change in policy by the NDEB could lead to a court-ordered change which could be, at one extreme, a requirement that every candidate for an

NDEB Certificate perform all of the components of the NDEB examination, or, at the other extreme, that *any* graduate of *any* dental program in the world be given an NDEB Certificate on payment of a fee and without examination. Both extremes do not seem to be in the best interests of either the profession or the public. However, if the decision is taken out of the hands of the profession and placed in the courts, the outcome is highly uncertain. The current situation for Canadian graduates is perceived as highly satisfactory and actions that would jeopardize that arrangement would be considered retrogressive.

A recent review by Solomon and Stoll⁶ of the "Sixth Report to the President and Congress on the Status of Health Personnel in the United States" draws attention to the current prediction that there will be a decreasing dentist to population ratio in the United States in the early 1990s and a decreasing number of active dentists by the turn of the century. It is further projected that sharp increases in first year enrolment in U.S. dental schools will be necessary to replace those dentists leaving active practice. Overall population growth will further increase the need for replacement dentists. Perhaps the Canadians who are seeking their dental education outside Canada are assisting U.S. schools to maintain their viability until the resource is needed at a later time.

Conclusions

1. Canadian dental students are attending U.S. dental schools in increasing numbers.
2. Fewer non-Canadians are attending Canadian dental schools.
3. Successful efforts by the CDA and others to reduce the number of first year dental student places have been largely unproductive as Canadians have increasingly gone elsewhere for a dental education.
4. The proportion of admitted students graduating on time has remained in the 93 per cent to 96 per cent range for most of the study period.
5. The policy of the NDEB will probably be challenged and it may be advantageous to consider a change before the challenge occurs.
6. In order to be aware of changes occurring in dentistry and dental education, an effective data gathering system is essential. Δ

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Send requests for reprints to Dr. Bennett at Dalhousie University. Prepared for Publication in the Journal of the Canadian Dental Association.

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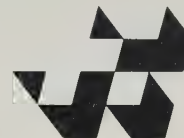
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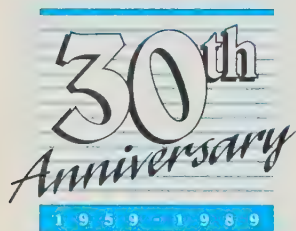
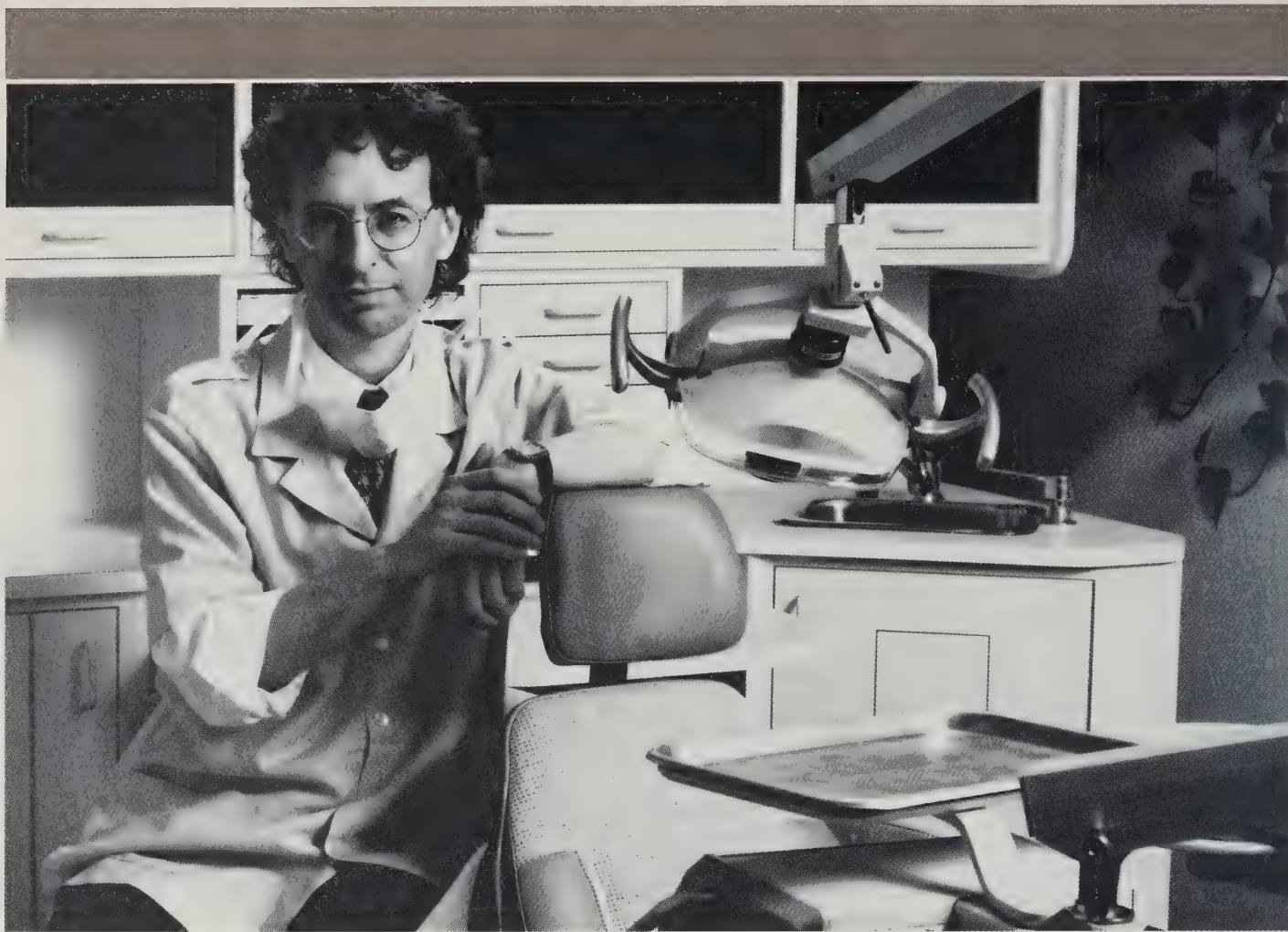
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“To be or not to be: DDS or DMD”

By P. Ralph Crawford, DMD

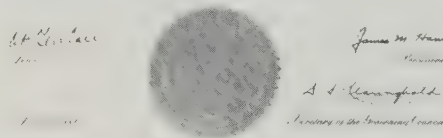
The confusion and controversy over the letters “DDS” or “DMD,” for dental degrees, has existed for many, many years and seems to be here to stay. No doubt much of the non-dental world is perplexed by different letters which describe professionals who perform essentially the same duties. It is safe, however, to acknowledge that many dentists themselves do not know why their university granted a degree stressing either “surgery” or “medicine.”

The inclusion of the word surgery into dental procedures has roots in ancient times when treatment of the teeth and surrounding tissue was most often divided into two areas — medicine and surgery; performed by physicians and surgeons.

Writings which describe the ancient but influential skills of early medical practitioners demonstrate the dichotomy of the healing arts. Avicenna (980-1037) was referred to as “one of the greatest of physicians,” while Abulcasis (1050-1122) “was one of the greatest surgeons.” Abulcasis was one of the earliest surgeons to devote serious attention to dental surgery. In fact, he designed a special set of instruments for the removal of calculus from teeth.

Medicine traditionally has been divided into two departments. The department of medicine where physicians deal with the art and science of healing diseases by internal remedies; and the department of surgery, where surgeons perform the art and science of treating disease, injuries

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University of Toronto
and has been admitted under the authority of
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of Toronto to the degree of
Doctor of Dental Surgery
In Witness whereof we have hereto subscribed
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of the University



and deformities by manual instrumentation.

For the ancients, surgical intervention was often the only choice available to bring relief from dental pain and an ultimate cure. Indeed, it was the dental surgeon who tended to their needs. Pierre Fauchard (1678-1761), “The Father of Modern Dentistry,” named his epic work of 1723, “Le chirurgien dentiste, ou, Traité des dents,” (The Surgeon-Dentist, or, Treatise on the Teeth), and on the title

page referred to himself as a “Surgeon Dentist.” The very first trained dentists to arrive on America’s colonial shores in the latter part of the 18th century called themselves surgeon dentists.

In 1829, the dentist-turned-physician, Dr. Samuel Sheldon Fitch, in his treatise “A System of Dental Surgery in Three Parts,” first introduced into the dental literature the use of the title “dental surgeon” to replace “surgeon dentist.”

By the time the first dental school in history was founded, the words “dental surgeon/surgery” were in common use. The Charter of the Baltimore College of Dental Surgery on March 6, 1840, stipulated “the said professors shall have full power to confer on any student . . . the degree of Doctor of Dental Surgery”. The pattern was set, the DDS had become “official.”

Harvard changed the pattern

In July of 1867, however, the pattern was challenged when a petition for the establishment of the Harvard Dental School was granted. The administration of the day could not reach a consensus on the name of the proposed new degree. It is reported that Doctor of Dental Surgery was rejected because Harvard issued degrees in Latin only and Chirurgiae Dentium Doctoris produced “CDD” which only added to the confusion. The title Scientiae Dentium Doctoris, DDS, (Doctor of Dental Science) was suggested but there was some discussion (unfounded?) that dentistry was not really a science.

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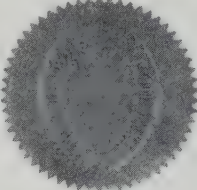
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Finally, Harvard consulted a Latin scholar who suggested that the ancient degree, "Medicinae Doctor" be prefixed with "Dentariae." Thus arose "Dentariae Medicinae Doctor." The scholar's recommendation was considered and adopted by Harvard's Dental School Faculty on February 16, 1869. Now the DMD was "official."

At the turn of the century in United States there were 57 Dental Schools but only two, Harvard and Oregon, awarded the DMD. The rest retained the DDS. By 1940, 100 years after the founding of the first dental school, only three: Harvard, Oregon and Tufts, issued the DMD; 46 Schools retained the traditional DDS.

The American Dental Association recognized the confusion created by the use of DDS and DMD and has attempted on several occasions, in 1965, and again in 1971, to establish a single doctoral degree. Discussions ranged from eliminating one degree entirely to eliminating both and inventing an entirely new one. Needless to say, agreement has never been reached and both degrees persist.

Following the Second World War there was a sudden increase in new dental schools with DMD as the degree of choice. If in 1940 only three dental schools out of 49 issued the DMD, a much different ratio exists today! In 1989, 23 of 66 North American dental faculties have awarded the Doctor of Dental Medicine. Sixteen of those 23 DMD programs were established since the 1950s.

First Canadian DMD in 1962

Canada's first DMD degree was awarded at the University of Manitoba Convocation of 1962. The founding of the Faculty

of Dentistry in Manitoba in 1958, created the first new dental school in Canada in 40 years. Dr. John W. Neilson, Manitoba's founding Dean, had the opportunity to recommend either degree. When questioned "Why the DMD?", he indicated that he was not necessarily swayed by high, lofty, esoteric ideals but influenced by the trend of dental education toward a more diagnostic/preventive form rather than the traditional reparative/surgical procedures.

Dr. Neilson, a 1941 Alberta DDS, made a tour of selected dental schools prior to the 1958 opening of the Manitoba Faculty and was particularly impressed with the DMD program at the University of Alabama. It emphasized the preventive aspects of dentistry. Thus, the Doctor of Dental Medicine degree found its way into Canadian dental history.

Today Canada is split 50:50. Those Faculties issuing DDS degrees are Toronto (founded in 1888), McGill (1904), Dalhousie (1908), Alberta (1923) and Western Ontario (1965). DMD degrees are awarded at Manitoba (1958), British Columbia (1962), Saskatchewan (1968) and Laval (1971). The University of Montréal had conferred the DDS upon its graduates since its 1904 founding but changed in 1973; citing that the DMD more accurately described the educational process leading to the degree.

No official discussion has been initiated at any recent Canadian or American Dental Association meetings regarding the future status of DDS and DMD, (either, or, or neither). With the remote likelihood of any new dental school being established in the near future, the debate of choice may never arise. Only the confusion will remain!! Δ

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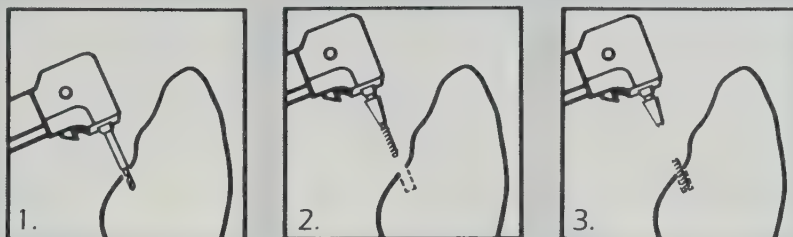
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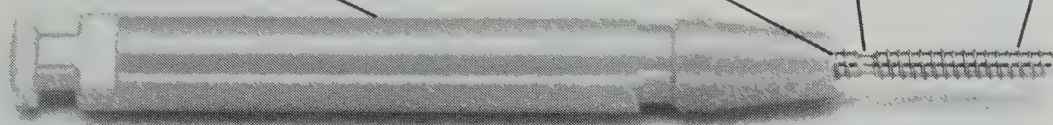


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Patient selection criteria for dental radiography

Garnet V. Packota, DMD, Dip OR, MSc
Dean A. Kolbinson, DMD, MSD
Saskatoon, Sask.

Patient selection criteria for radiography can be defined as descriptions of clinical conditions derived from patient signs, symptoms and history that identify patients who are likely to benefit from a particular radiographic examination.¹ The development and application of patient selection criteria for radiography in general arose from concerns about unnecessary radiation exposure and cost from unproductive radiographic examinations.¹ Such concerns exist for dental radiographs, since they are among the most frequently taken films² and constitute a significant portion of the total cost of dental care in Canada and the United States.^{3,4}

The use of "routine" or "screening" radiographs in dentistry has been proven to have no sound scientific basis. A complete mouth series or panoramic radiograph for screening purposes on all new patients does not appear to be necessary or productive.⁵⁻⁷ Similarly, "routine" bitewing examination often does not yield positive findings.⁸ "Routine" bitewings are often taken in dental practice at regular intervals to aid in detection of interproximal caries, but evidence suggests that the nature and progression of caries do not justify a high frequency of radiographic examination for all patients.⁹⁻¹¹ The productivity and value of screening radiographs in detection of hidden or "occult" disease (eg. tumours, cysts, or other pathologic lesions) of the jaws in asymptomatic patients has been shown to be low.^{12,13}

The recommendation that dental radiographs should be taken only when there is a clinically justifiable need is not a new concept,¹⁴ but only more recently have investigators begun to discuss or suggest specific dental radiographic selection criteria.¹⁵⁻²¹ Conferences held earlier this decade have dealt with the development

of patient selection criteria for dental radiographs.^{22,23}

In 1988, a technical report entitled "The Selection of Patients for X-Ray Examinations: Dental Radiographic Examinations" was published by the Department of Health and Human Services of the Food and Drug Administration in the United States. This report is the result of five years of work by an expert panel sponsored by the Center for Devices and Radiological Health of the Food and Drug Administration.¹ Their guidelines for selection criteria include recommendations regarding frequency of examination for recall patients. A report prepared in 1987 in Canada for the Department of National Health and Welfare supported the opinions expressed in the American report.²⁴

Teaching of radiographic patient selection criteria has not been part of the undergraduate dental curriculum in many dental schools in the past,²⁵⁻³⁰ but now that this concept has been included in the recently published curricular guidelines by the American Association of Dental Schools,³¹ it is likely to receive greater attention from dental educators in the future. However, investigation is needed to determine the best way to teach selection criteria to dental students.

The existence of suggested guidelines or selection criteria should not hinder the manner in which most dentists practice. The selection criteria are those which most practitioners consciously or subconsciously apply on a day-to-day basis when prescribing radiographs. The purpose of selection criteria is to eliminate or at least reduce *unnecessary* and *unproductive* dental radiographic examinations.

One of the concerns that patients have in their relationships with physicians and dentists is the ordering of radiographs without reasons being given.³² The appli-

cation of accepted selection criteria in prescribing radiographs allows the practitioner to more easily justify the reasons for the radiographic examination.

With the existence of published selection criteria guidelines, two concerns arise. Firstly, although the intent of the criteria is to reduce unnecessary radiation exposure and financial cost, their application may result in an inadvertent tendency by dental practitioners to underutilize radiography. Dentists must be wary of this, since it could lead to inaccurate or delayed diagnosis. Secondly, there may be an attempt by governments and third party dental insurance carriers to interpret the selection criteria guidelines as being "written in stone" and base their payments for dental radiographs strictly on these guidelines. This might put pressure on dentists to prescribe radiographs only in accordance with the guidelines, rather than judging each patient's needs individually. Decisions regarding the taking of radiographs are the dentist's professional responsibility and must remain so; the profession must not allow itself to get into a situation where such decisions are influenced by a third party who is not treating the patient.

As long as the need for dental radiographs is critically and logically evaluated for each patient, radiographic selection criteria such as those published in the recent Food and Drug Administration report¹ should prove to be useful as guidelines to the dental practitioner, dental educator, and dental student. If utilized properly in dental radiography, the guidelines will aid the profession in minimizing the financial cost and the radiation dose to patients without sacrificing the maximum diagnostic benefit.

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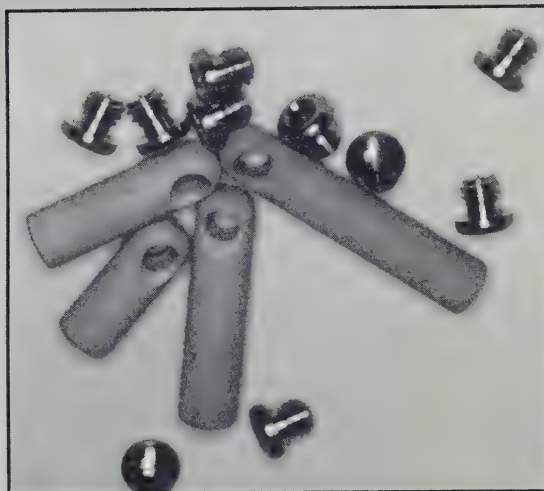
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Moebius and Poland Syndromes: A report of a case

Lorne D. Koroluk, DMD, MSD, MRCD(C)
Dennis T. Lanigan, DMD, MD
Saskatoon, Sask.

ABSTRACT

This report describes the dental treatment of a 45-month-old Native American Indian female with Moebius and Poland syndromes, two rare syndromes which can occur simultaneously.

SOMMAIRE

Voici un rapport sur les traitements dentaires donnés à une autochtone américaine de 45 mois affligée des syndromes de Moebius et de Poland, deux rares syndromes qui peuvent se manifester simultanément.

In 1880, Von Graefe¹ was the first to describe patients with facial diplegias. Moebius in 1892 attempted to classify multiple congenital nerve palsies.² He created a division, now known as Moebius Syndrome, in which sixth and seventh cranial nerve palsies were combined. In Moebius Syndrome seventh cranial nerve involvement results in bilateral facial paralysis which imparts a symmetrical mask-like appearance to the face.³ Unilateral facial nerve palsy or asymmetrical presentations can occur occasionally.⁴ Sixth nerve palsy involving the lateral rectus muscle prevents patients from abducting either eye beyond the midline. Other ocular presentations can include ptosis, nystagmus, strabismus, epicanthal folds, and corneal ulceration or conjunctivitis caused by an inability to close the eyelids.^{5,6} There is invariably a history of sucking and feeding problems in infancy which usually persist into childhood.^{6,7} Feeding problems can be

much more involved if other cranial nerves such as the hypoglossal are involved. Intelligence is generally normal, although there is some mental retardation in approximately 10 per cent of cases.⁸ Although rare instances of autosomal dominant inheritance with variable expressivity have been reported, the syndrome is most commonly a sporadic occurrence in an otherwise normal family.³

The two major explanations for the possible etiologic basis for Moebius syndrome are the primary neurogenic and the primary muscular theories. Nuclear deficiency and supra-nuclear paralysis are viewed by most authors as the more acceptable theory.⁹ Others consider the condition to be a mesenchymal defect arising from absence of muscles, with secondary failure of development of the nerves, and the ultimate degeneration of the nuclei as a result of disuse.¹⁰

In 1841, Poland reported a case of an individual with unilateral absence of the pectoralis minor muscle and the sternal portion of the pectoralis major muscle, as well as cutaneous syndactyly of the ipsilateral hand.¹¹ This presentation has since become known as Poland Syndrome. Other associated malformations can include absence of the nipple and areola, rib defects and hypoplasia of the hand or even the whole arm on the affected side.³ Bilateral, unilateral or asymmetrical hypoplasia or aplasia of the pectoralis major muscle, or the complete Poland Syndrome has been reported in 15 per cent of patients with Moebius Syndrome.^{12,13}

Case Report

A three-year-old female of Native American Indian ancestry with combined Moebius and Poland Syndromes was referred to the College of Dentistry, University of

Saskatchewan for dental evaluation and treatment.

History

The child's parents were first cousins once removed. The patient was their second child. The mother had three other living children ranging in age from 5-8 years who were adopted out and details regarding their health were unknown. The family history was negative on both sides for anomalies of the hand, face or musculature of the chest. One of the mother's nephews, however, was said to have died at birth with multiple congenital anomalies.

The patient was the product of a spontaneous vaginal delivery which occurred at full term. The pregnancy was complicated by excessive maternal intake of alcohol. The mother denied the use of other drugs and had no history of exposure to radiation while pregnant. The birth weight was 7 lbs. 6 oz. Unusual features at birth included a broad flat nose, broad upper lip, deviation of the tongue to the right, absence of the right pectoralis muscles, and webbing of the right hand.

A sixth-month examination revealed the patient to be at the 25th percentile for weight and length, and at the 40th percentile for head circumference. At this time the patient was diagnosed as having Poland and Moebius Syndromes, and fetal alcohol syndrome was ruled out. Chromosome studies revealed a normal female karyotype. The patient also had delayed motor development and a history of difficulty during feeding.

The child presented to the College of Dentistry, University of Saskatchewan with a history of facial cellulitis originating from a periapically involved primary tooth. An intraoral examination revealed multiple carious lesions, especially



Fig. 1. View of patient showing asymmetry of right chest wall due to absent right pectoralis major muscle and typical "mask-like" facies of Moebius Syndrome.

involving the maxillary and mandibular incisors, and the maxillary and mandibular left posterior teeth. Due to the extent of dental disease present and the patient's poor behaviour in the dental environment, it was recommended that her dental care be completed under general anesthesia.

On June 2, 1987, the patient was admitted to University Hospital for dental extractions and restorations under general anesthesia. A pre-operative history and physical examination were carried out by the Department of Pediatrics. This examination revealed a 45-month-old child with unusual facial features due to a lack of facial expression and a small mandible (**Fig. 1**). The patient weighed 15 kg (40th percentile) and was 95 cm in height (10th percentile). She was unable to abduct either eye, and had epicanthal folds and a wide nasal bridge. Movements of the tongue and soft palate were within normal limits. Musculoskeletal examination revealed an absent right pectoralis major muscle and an asymmetry of the hands (**Figs. 1 and 2**). Neurological examination found cranial nerves VI and VII to have decreased function.

The following morning, the patient was taken to the operating room where a more complete dental examination was performed under general anesthesia. Oral hygiene was very poor and moderate to severe gingivitis was observed in all quadrants. Radiographic and clinical

examinations revealed extensive rampant caries involving the primary dentition. All primary teeth were present. Multiple chronic draining fistulas were present, involving teeth 64, 65 and 74. Teeth 55, 54, 63, 84 and 85 were restored using amalgam restorations. Because of extensive decay and pulpal involvement, teeth 52, 51, 64, 65, 75, 74, 73, 72, 71, 81 and 82 were extracted.

The procedure was well tolerated. The recovery period was unremarkable and the patient spent an uneventful night on the ward. She was discharged to the care of her parents the following morning and will be followed up for prosthetic and space maintenance procedures.

Conclusion

Moebius and Poland Syndromes are rare disorders which can occur simultaneously. Both syndromes have characteristic presentations which make diagnosis relatively easy. The classical presentation of Moebius Syndrome is bilateral facial nerve paralysis resulting in a symmetrical mask-like appearance of the face, in conjunction with sixth nerve palsies which prevent normal abduction of the eyes.

Poland Syndrome usually presents as a unilateral absence of the pectoralis minor muscle and a portion of the pectoralis major muscle, and cutaneous syndactyly.

The poor condition of the patient's dentition can most probably be attributed to poor oral hygiene and diet. Feeding difficulties associated with Moebius Syndrome may result in affected children being bottle fed to a later than normal age. Such a situation could conceivably result in a more severe type of "nursing bottle caries" in these patients.

Moebius Syndrome may significantly affect dental treatment of adults. A rare unilateral presentation of Moebius Syndrome may be incorrectly diagnosed as Bell's Palsy. In such cases, the ability or lack of ability to abduct either eye beyond the midline would be used to differentiate between the two conditions. Adult patients with Moebius Syndrome may also have problems with complete dentures. Due to absent or reduced facial muscle control, such patients may have difficulty functioning with a complete denture. Δ

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Fig. 2. View of patient's hands showing asymmetry in size and previous correction of syndactyly.

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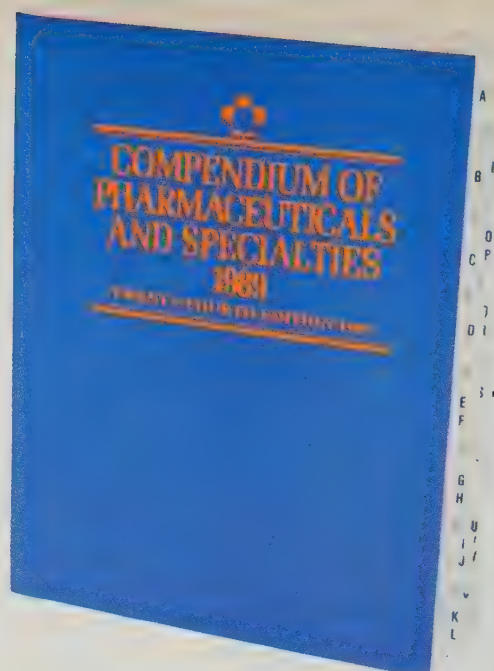
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Dental Radiology Asepsis Survey

J.S. Hubar BSc, DMD, MSc
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INTRODUCTION

The dental profession is rapidly acknowledging the immediate need to implement effective, uniform infection control measures. The American Dental Association and the Centers for Disease Control have formulated general guidelines which follow the concept of "Universal Blood and Body Fluid Precautions" and are recommended for everyone providing dental care.¹ It is impossible for any health care provider to definitively identify every patient who may be infected with a dangerous microorganism. Consequently, based upon these recommendations, the only safe procedure is to consider all patients as potentially dangerous and to treat all patients identically in regards to infection control. Specific asepsis guidelines developed for dental radiology only have not been outlined. The purpose of this survey was to compare some of the asepsis procedures currently being followed in the radiology departments of United States and Canadian dental schools.

AVANT-PROPOS

La profession dentaire reconnaît volontiers qu'on doit immédiatement mettre en vigueur des mesures efficaces et uniformes pour réduire les dangers d'infection. L'Association dentaire américaine et les Centers for Disease Control ont formulé des directives générales en se conformant au principe suivant le quel il

convient de prendre des précautions avec le sang et les fluides de l'organisme, et ils les recommandent à tous ceux qui administrent des soins dentaires. Il est impossible pour tout professionnel de la santé de repérer avec certitude tous les patients qui peuvent être infectés par des micro-organismes dangereux. Aussi, si l'on s'en remet à ces recommandations, la seule procédure qui soit sûre est-elle de considérer tous les patients comme pouvant être dangereux et de les traiter tous de la même façon relativement aux dangers d'infection. Cependant, il n'y a pas de directives aseptiques précises de formulées uniquement pour la radiologie dentaire. C'est pourquoi ce sondage avait pour but de comparer certaines mesures aseptiques prises actuellement dans les départements de radiologie des écoles de médecine dentaire des États-Unis et du Canada.

Method

In the fall of 1988, questionnaires were mailed directly to the radiology departments of 69 dental schools in the US and Canada. Covering letters were included, which stated that the responses obtained from each institution would remain anonymous. Each questionnaire was supplemented with a request that any procedures that deviated from the protocol outlined should also be noted.

Results

Fifty questionnaires of the original 69 sent out were completed and returned to the principal investigator. The positive and negative responses for each question

were tallied and are listed in **Table I**. The host institution's aseptic procedures have also been included in the final results (i.e., final total: 51 institutions). Utilization of sterile instruments was assumed to be standard protocol and therefore was omitted from the questionnaire.

Responses to question 3 indicate that a majority of institutions (63 per cent) require the operator to wear gloves during radiographic exposure of patients. However, institutions broadly differ in their attitudes towards the necessity for operators to change gloves during a single radiographic procedure. **Table I** shows that 19 institutions (37 per cent) require operators to discard their initial pair of gloves and to reglove with a new pair, while six (12 per cent) additionally insist that operators don a third pair of gloves during a single radiographic session. Some alternate procedures noted were: the utilization of two students (i.e., one to expose and disinfect the operatory and another to process the radiographs; and more typically, utilization of a single pair of gloves that are washed between exposure and processing of radiographs, and then discarded). However, one institution permits utilization of washed gloves on more than one patient, while another requires operators to wear plastic overgloves, worn over a pair of latex gloves. The overgloves can be discarded and replaced during any stage of the procedure. The original latex gloves are subsequently discarded at the conclusion of each patient's radiographic treatment.

Forty-seven (92 per cent) of the institutions separate the exposed films. One institution wraps the unexposed films in a

TABLE I

Responses to Asepsis Questionnaire

1. IS A HEADREST COVER ROUTINELY USED ON THE DENTAL CHAIR?
YES - 38 (74%) NO - 13 (26%)
2. ARE HEADREST COVERS ROUTINELY CHANGED FOR EACH NEW PATIENT?
YES - 36 (71%) NO - 15 (29%)
3. ARE GLOVES AND MASKS MANDATORY FOR ALL OPERATORS?
YES - GLOVES AND MASKS - 32 (63%)
NO - NEITHER GLOVES NOR MASKS REQUIRED - 6 (12%)
GLOVES REQUIRED, BUT NOT MASKS - 13 (25%)
4. ARE FILM PACKETS WIPED DRY IMMEDIATELY AFTER USE (EXPOSURE)?
YES - 41 (80%) NO - 10 (20%)
5. ARE FILM PACKETS PLACED IN A SEPARATE RECEPTACLE AFTER USE (IE. PLASTIC CUP)?
YES - 47 (92%) NO - 4 (8%)
6. AFTER EXPOSING ALL FILMS, DOES THE OPERATOR DISCARD HIS/HER GLOVES AND WEAR A NEW (SECOND) PAIR OF GLOVES TO DISINFECT THE OPERATORY?
YES - 19 (38%) NO - 32 (62%)
7. ARE ALL INSTRUMENTS WASHED AND DRIED PRIOR TO STERILIZATION?
YES - 44 (86%) NO - 7 (14%)
8. AFTER DISINFECTING THE OPERATORY, IS IT REQUIRED THAT THE OPERATOR REPLACE HIS SECOND PAIR OF GLOVES FOR A CLEAN (THIRD) PAIR FOR TRANSPORTING THE EXPOSED FILMS TO THE DARKROOM FOR PROCESSING?
YES - 6 (12%) NO - 45 (88%)

finger cot, which is disposed of after the exposure, while another school covers the films in plastic wrap.

Disinfecting the operatory was typically performed by spraying with a disinfectant solution. However, five institutions utilize a disposable plastic wrap to cover the entire unit and routinely replace it for each patient.

Discussion

This survey provides a baseline of information on US and Canadian dental schools' aseptic procedures currently followed in their respective radiology departments. In general, most institutions follow the general guidelines set by the ADA and the Centers for Disease Control²⁻⁵ (i.e., new gloves and masks for each patient). However, six of the institutions surveyed (12 per cent) do not obey the minimum recommendations (i.e., do not wear gloves) and an equal number (6) exceed the necessary recommendations (i.e., multiple pairs of gloves per patient). The rationale given for the necessity of using multiple gloves was that cross-contamination was possible when an operator wore the same pair of gloves for cleaning the X-ray operatory and for transporting the exposed films to the film processor, where multiple numbers of students, faculty and technicians would be contacting the same film processor.

The level of asepsis which operators exposing radiographs must attain is controversial. For example, mandatory utilization of safety glasses and face masks for radiology is questionable because

aerosol sprays are not typically generated in radiographic procedures. Consequently, there are wide diversities in asepsis protocol in the dental radiology departments of the different institutions. This portends that universal guidelines set for dentistry may not be totally applicable for all departments. Individual sets of guidelines should be developed for each department, commensurate with their level of exposure to hazardous organisms and materials. Δ

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Onset of action: The onset of action is rapid (30 to 120 seconds in the upper jaw; 1 to 4 minutes in the lower jaw) and POLOCAINE 3% without vasoconstrictor will ordinarily provide operating anesthesia of 20 minutes in the upper jaw and 40 minutes in the lower jaw.

Mepivacaine does not ordinarily produce irritation or tissue damage.

Pharmacokinetics and metabolism: Mepivacaine is rapidly metabolized with only a small percentage of the anesthetic (5 to 10 percent) being excreted unchanged in the urine. Mepivacaine, because of its chemical structure, is not detoxified by the circulating plasma esterases. The liver is the principal site of metabolism, with over 50 percent of the administered dose being excreted into the bile as metabolites. Most of the metabolized mepivacaine is probably resorbed in the intestine and then excreted into the urine. Only a small percentage is found in the faeces. The principal route of excretion is via the kidney. Most of the anesthetic and its metabolites are eliminated within 30 hours. It has been shown that hydroxylation and N-demethylation, which are detoxification reactions, play important roles in the metabolism of the anesthetic. Three metabolites of mepivacaine have been identified from adult humans; two phenols, which are excreted almost exclusively as their glucuronide conjugates, and the N-methylated compound 2', 6'-pipecoloxylidide.

CONTRAINDICATIONS

POLOCAINE 3% (mepivacaine hydrochloride) is indicated for the production of local anesthesia for dental procedures by infiltration injection or nerve block.

CONTRAINDICATIONS

POLOCAINE 3% (mepivacaine hydrochloride) is contraindicated in patients with a known hypersensitivity to amide type local anesthetics.

WARNINGS

DENTAL PRACTITIONERS WHO EMPLOY LOCAL ANESTHETIC AGENTS SHOULD BE WELL TRAINED IN DIAGNOSIS AND MANAGEMENT OF EMERGENCIES WHICH MAY ARISE FROM THEIR USE. RESUSCITATIVE EQUIPMENT, OXYGEN AND OTHER RESUSCITATIVE DRUGS SHOULD BE AVAILABLE FOR IMMEDIATE USE.

Reactions resulting in fatality have occurred on rare occasions with the use of local anesthetics, even in the absence of a history of hypersensitivity.

Local anesthetic procedures should be used with caution when there is inflammation and/or sepsis in the area of the proposed injection.

Use in Children: Great care must be exercised in adhering to safe concentrations and dosages for pediatric administration. (See DOSAGE AND ADMINISTRATION).

PRECAUTIONS

The safety and effectiveness of local anesthetics depend upon proper dosage, correct technique, adequate precautions and readiness for emergencies.

INJECTIONS SHOULD ALWAYS BE MADE SLOWLY WITH ASPIRATION TO AVOID INTRAVASCULAR INJECTION AND, THEREFORE, SYSTEMIC REACTION TO THE LOCAL ANESTHETIC.

Signs such as excitation, disorientation, drowsiness, may be early indications of a high blood level of drug and may occur following inadvertent intravascular administration or rapid absorption of mepivacaine.

The lowest dosage that results in effective anesthesia should be used to avoid high plasma levels and possible adverse effects. Injection of repeated doses of mepivacaine may cause significant increase in blood levels with each repeated dose due to slow accumulation of the drug or its metabolites, or due to slower metabolic degradation than normal.

Performance varies with the status of the patient. Debilitated or elderly patients, acutely ill patients, and children should be given reduced doses commensurate with their weight and physical status. Mepivacaine should be used with caution in patients with a history of severe disturbances of cardiac rhythm or heart block.

POLOCAINE 3% (mepivacaine hydrochloride) should be used with caution in patients with known drug allergies and sensitivities. A thorough history of the patient's prior experience with mepivacaine or other local anesthetics as well as concomitant or recent drug use should be taken (see CONTRAINDICATIONS). Patients allergic to methylparaben or para-aminobenzoic acid derivatives (procaine, tetracaine, cocaine, etc.) have not shown cross-sensitivity to agents of the amide type such as mepivacaine.

Since mepivacaine is metabolized in the liver and excreted by the kidneys, it should be used cautiously in patients with liver and renal disease.

Many drugs used during the conduct of anesthesia are considered potential triggering agents for malignant hyperthermia. It has been shown that the use of amide local anesthetics in malignant hyperthermia patients is safe. However, there is no guarantee that neural blockade will prevent the development of malignant hyperthermia during surgery. It is also difficult to predict the need for supplemental general anesthesia. Therefore a standard protocol for the management of the malignant hyperthermia should be available.

Drug Interaction: If sedatives are employed to reduce patient apprehension, use reduced doses, since local anesthetic agents, like sedatives, are central nervous system depressants which, if given in combination may have an additive effect. Young children should be given minimal doses of each agent.

Use in Pregnancy: Safe use of mepivacaine has not been established with respect to adverse effects on fetal development. Careful consideration should be given to this fact before administration during pregnancy.

ADVERSE REACTIONS

Systemic adverse reactions involving the central nervous system and the cardiovascular system usually result from high plasma levels due to excessive dosage, rapid absorption, or inadvertent intravascular injection.

Less common reactions

Central Nervous System: Reactions involving the central nervous system are characterized by excitation or depression. Nervousness, dizziness, blurred vision, or tremors may occur followed by drowsiness.

Gastrointestinal: Nausea and vomiting

Less common reactions

Central Nervous System: More serious but less common reactions that reflect an overdosage of local anesthetic are: convulsions, unconsciousness, and possibly respiratory arrest. Since excitement may be transient or absent, the first manifestations of adverse reactions may be drowsiness merging into unconsciousness and respiratory arrest.

Cardiovascular: Reactions involving the cardiovascular system include depression of the myocardium, hypotension, bradycardia, and even cardiac arrest.

Allergic: Allergic reactions are rare and may occur as a result of sensitivity to the local anesthetic. Such reactions may be characterized by cutaneous lesions of delayed onset or urticaria, edema and other manifestations of allergy. The reaction may be abrupt and severe and is usually not dose related. The detection of sensitivity by skin testing is of limited value. As with other local anesthetics, anaphylactic reactions to mepivacaine have rarely occurred.

Neurologic: The incidence of adverse neurological reactions directly caused by the use of local anesthetics is very low. Neurological reactions may be related to the total dose of the local anesthetic administered and are also dependent upon the particular drug used, the route of administration and the physical status of patient. Many of these effects may be related to local anesthetic techniques, with or without contribution from the drug.

OVERDOSAGE

Systemic toxicity to amide type local anesthetics is initially manifested as CNS excitation and may result in a slow onset of nervousness, dizziness, blurred vision and tremors followed by drowsiness, convulsions, unconsciousness and possibly respiratory arrest.

Toxic cardiovascular reactions to local anesthetics, which are usually depressant in nature, may occur rapidly and with little warning and can lead to peripheral vasodilation, hypotension, myocardial depression, bradycardia and possibly cardiac arrest.

Treatment of Systemic Reactions: Treatment of toxic manifestations consists of assuring and maintaining a patent airway and supporting ventilation (respiration) as required. This usually will be sufficient for the management of most reactions.

Should a convulsion persist despite ventilatory therapy, small increments of anticonvulsive agents may be given intravenously, such as benzodiazepine (e.g., diazepam) or ultra-short acting barbiturates (e.g., thiopental or thiamylal) or short-acting barbiturates (e.g., pentobarbital or secobarbital).

Cardiovascular depression may require circulatory assistance with intravenous fluids and/or vasopressors (e.g., epinephrine) as dictated by the clinical situation.

Allergic reactions should be managed by conventional means.

DOSAGE AND ADMINISTRATION

As with all local anesthetics, the dose varies and depends upon the area to be anesthetized, the vascularity of the tissues, individual tolerance and the technique of anesthesia. THE LOWEST DOSE NEEDED TO PROVIDE EFFECTIVE ANESTHESIA SHOULD BE ADMINISTERED. For specific techniques and procedures refer to standard dental manuals and textbooks.

Adults

RECOMMENDED DOSAGES FOR POLOCAINE 3% (30 mg/mL) IN THE AVERAGE, HEALTHY 70 KG ADULT

	Infiltration	Block
Suggested dosage	1-2 mL	1.5 - 5 mL
Onset of action (approx)	2.5 min	4 min
Duration of action		
Pulp	15 min	90 min
Soft tissue	1-1.5 h	2.5 h

Each cartridge contains 1.8 mL of 3% solution or 54 mg of mepivacaine.

MAXIMUM DOSAGE:

Adults: It is recommended that the dose of POLOCAINE at any one time should not exceed 5-7 mg/kg body weight or 400 mg mepivacaine hydrochloride, 7 cartridges. However, the dose administered must be tailored to the individual patient and procedure, and the maximum dose here quoted should be used as a guide only.

Children: For children, the dose may have to be reduced commensurate with body weight.

The maximum pediatric dose should be carefully calculated and should not exceed 5 cartridges (270 mg of the 3% solution). The maximum pediatric dose should be calculated as:

Maximum Dose for Children =

Child's Weight (kg) _____ X Maximum Recommended Dose for Adults (400 mg)
70

When using POLOCAINE 3% for infiltration or regional block anesthesia, injection should always be made slowly and with frequent aspiration.

Any unused portion of a cartridge should be discarded.

Non medicinal ingredients:

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September 21-23: 41st Annual New Orleans Dental Conference What's Cookin' in '89. For more information, call or write: Ms. Norma Ward, New Orleans Dental Conference, Suite 119, 3101 W. Napoleon Ave, Metairie, LA 70001, USA. (504) 834-6449.

September 21-23: 28th Annual Meeting and Scientific Session of the Canadian Academy of Prosthodontics in Montreal. Contact: Dr. Alan R. Mills, Faculty of Dentistry, The University of Western Ontario, London, Ont N6A 5C1.

September 22-24: 25th Annual Session of the Canadian Academy of Endodontics in Montreal. For more information contact: Wayne Acheson, Suite 301, 400 St Mary Ave, Winnipeg, Manitoba R3C 4K5.

September 25-28: New Zealand Dental Association Convention in Napier. Contact: Dr. D.G. Arnott, 30 Munro St, Napier, New Zealand.

September 27-29: European Prosthodontic Association/Sociedad Espanola de Protesis Estomatologica in Barcelona, Spain. Contact: Dr. Juan Salsench, Universidad de Barcelona, Clinica Odontologica, Hospital de Bellvitge, 08907 L'Hospitalet de Lionbregat, Barcelona, Spain.

September 27-30: Annual Meeting and Dental Fair of the Icelandic Dental Association at the Hotel Saga in Iceland. Contact: Mrs. Dagbjartsdottir, PO Box 8596, Sidumuli 35, Iceland. Tel: 34646.

October/Octobre 1989

October 5-8: IX National Dental Congress of Asociacion Odontologica Dominicana in Santo Domingo. Contact: IX Congreso Nacional de Odontologica, Apartado Postal 1002, Santo Domingo, Dominican Republic.

October 5-8: Annual Meeting of the International Association for Orthodontics and the American Orthodontic Society in Montreal. For details, contact: IAO Headquarters, 211 E Chicago Ave, Suite 915, Chicago, IL 60611. (312) 642-2602.

October 11-15: American Academy of Implant Dentistry in Scottsdale. Contact: Mr. John P. Winiewicz, PO Box 2002, Abington, MA 02351, USA.

October 18-21: V Congresso Coso Espanol de Estomatologia, Cirurgia Maxilofacial e Dedicina Dentaira in Portugal. Contact: Ivo Furtado, R. Rainha, D. Amelia, 36-R/C-D, 1600 Lisbon, Portugal. Tel: 759-3948.

October 24-27: American College of Prosthodontists in Tuscon. Contact: Ms. Linda Wallenborn, 1777 NE Loop 410, Suite 904, San Antonio, TX 78217, USA.

October 24-27: 3rd International Medical, Hospital and Dental Equipment and Facilities Exhibition in Bangkok, Thailand. Contact: Elsa Wong, SHK Inter-

national Services Ltd, 22/f National Mutual Centre, 151 Gloucester Rd, Hong Kong, 89587 SHKIS HX.

October 25-28: American Academy of Periodontology in Washington, DC. Contact: Ms. Jean Pierson, 211 E Chicago Ave, Suite 1400, Chicago, ILL 60611, USA.

October 27-28: International Congress for Oral Implantologists in New York. Contact: Ms. Margaret Jackson, 248 Lorraine Ave, 3rd floor, Upper Montclair, NJ 07043, USA.

October 27-31: American Institute of Oral Biology in Palm Springs. Contact: Dr. Philip Boyne, Dept of Surgery, School of Dentistry, Room 3306, 24777 University St, Loma Linda, CA 92350, USA.

October 30-November 1: American Academy of Maxillofacial Prosthetics in Tuscon. Contact: Dr. Gregory Parr, MCG/School of Dentistry, Dept of Prosthodontics, August, GA 30912, USA.

October 30-November 3: American Dental Trade Association in Maui, Hawaii. Contact: Mr. Nikolaj Petrovic, ADAT, 4222 King St, Alexandria, VA 22302, USA.

October 30-November 5: International College of Dentists in Honolulu, Hawaii. Contact: Dr. Richard Schaffer, One Metro, 51 Monroe St, Suite 1501, Rockville, MD 20850, USA.

November/Novembre 1989

November 1-3: 52nd Annual Meeting of the American Association of Public Health Dentistry in Honolulu, Hawaii. Contact: AAPHD, National Office, 10619 Jousting Lane, Richmond, VA 23235, USA.

November 3: American Association of Dental Consultants in Honolulu, Hawaii. Contact: Dr. Alan Helerstein, 919 Deer Park Ave, North Babylon, NY 11703, USA.

November 3: American Endodontic Society in Honolulu, Hawaii. Contact: Dr. Alvin H. Arzin, 2 Learning Lane, Levittown, PA 19054, USA.

November 4-9: American Dental Association Convention in Hawaii. For convention pre-registration and first class group travel arrangements for 10 days, please contact: Dr. Bob Brandon, 85 Lonsdale Dr, London, Ont N6G 1T4. Tel: (519) 657-3368.

November 5-8: American Academy of Dental Radiology Contact: Capt. Tom McDavid, OASD Health Affairs, Pentagon Room 3D372, Washington, DC 20301-1200, USA.

November 8-12: American Society of Dentistry for Children in San Diego, CA. Contact: Ms. Carol A. Teuscher, 211 E Chicago Ave, Suite 1430, Chicago, Ill 60611, USA.

November 15-18: VI Congreso Internacional de Estomatologia y XI Congreso Nacional de Odontologia in Lima, Peru. Contact: Dr. Ramon Castillo, President de los Congresos, Alfredo Salazar 583, Of. 102, San Isidro, Lima, Peru.

November 17-20: XX Congreso Asociacion Dental Mexicana Contact: Dr. Yolanda Villarreal de Justus, Ave Ejercito Nal #530 - 5 piso, Polanco, Mexico.

November 21-24: Congrès national de l'Association dentaire française in Paris. Contact: Dr. A. Deyrolle, Palais des Congrès, 92, av de Wagram, 75017 Paris, France. Tel: 42 27 89 00.

November 22-24: Swedish Dental Society Contact: Ms. Charlotte Nackstad, Stockholm International Fairs, Box 5843, 102 48 Stockholm, Sweden. Tel: 0046-8-663 12 50.

November 28-December 2: Osseointegration in Clinical Dentistry: Technician and Clinical Training Courses in Malmo, Sweden. For details, contact: Postgraduate Centre of Dentistry, Cal Gustafs vag 34, S21421 Malmo, Sweden.

November 30: Toronto Academy of Dentistry - 52nd Annual Winter Clinic at the Metro Toronto

Convention Centre. For information, contact the Academy of Dentistry at (416) 967-5649.

December/Décembre 1989

December 8-10: 13th Annual Session and Scientific Meeting of the Association for Dental Sciences of the Republic of China in Tainan, Taiwan. Contact: Dr. Chin-Kuang Wen, 7F, No. 120, Sec. 2, Chung Hsiao E Rd, Taipei, Taiwan. Tel: 3965390-1.

December 14-16: The Dental Association of Thailand Contact Col Amnarj Dhammajinda, Secretary General, The Dental Association of Thailand, 12 Soi Prasanmitr, Sukhumvit 23, Bangkok 10110, Thailand. Tel: 258-9251.

December 27-30: 44th Indian Dental Conference in Calcutta. For details write: Dr. K.L. Banerjee, Conference Secretariat, Dr. R. Ahmed Dental College & Hospital, 114, Acharya, J.C. Bose Rd, Calcutta - 700 014 India.

January/Janvier 1990

January: 26th International Alpine Dental Conference in Courcheval, France. Contact: L.W. Bryer, 24 Cadogan Sq, London SW1X 0J8, England.

January 20-25: XIV Congresso Paulista de Odontologia, XXVIII Seminario Odontologico Latino-Americano, II Congresso Universitario Paulista de Odontologia in Brazil. Contact: Dr. Joao Vieira de Moraes, President, Associacao Paulista dos Cirurgioes Dentistas, Rue Humaita, 389 - Bela Vista C.P. 2523, CEP 01321 Sao Paulo, Brazil. Tel: 37-4194.

January 20-27: XXIII Congreso de FOCAP in Atlapa, Panama. Contact: Dr. Ricardo Arango, president, XXIII Congreso internacional de FOCAP, PO Box 6777, Panama 5, Panama.

January 24-27: First World Endodontic Congress in Mexico City. Contact: Dr Jose Oynick, Prado Sur 480, Lomas Virreyes, Mexico 11000 DF, Mexico.

February/Février 1990

February 11-14: Chicago Dental Society's Midwinter Meeting. For pre-registration information, contact: Chicago Dental Society, 401 N. Michigan Ave, Chicago, IL 60611, USA.

February 18-22: Annual Scientific Convention of the Dental Association of Trinidad and Tobago. Contact: The Honourary Secretary, 115 Abercromby St, Port-of-Spain, Trinidad and Tobago.

March/Mars 1990

March: 27th International Alpine Dental Conference in Courcheval, France. Contact: LW Bryer, 24 Cadogan Sq, London SW1X 0J8, England.

March 7-11: International Association for Dental Research in Cincinnati, Ohio. Contact: Ms. Judith A. Gauchel, Scientific Program/Meeting Mgr, 1111-14th St NW, Suite 1000, Washington, DC 20005 USA. Tel: (202) 898-1050.

March 8-9: The 9th Jordanian Dental Congress in Amman. Contact: Dr. Irfan Sultan, Chairman, Scientific Committee, PO Box 1326, Amman, Jordan.

March 14-16: The 4th World Dental Congress of the Egyptian Clinical Dental Society in Cairo. Contact: Prof. Avd Elahdi Nasif Selim, College of Dentistry, Cairo University, Cairo, Egypt.

March 28-31: Annual Dental Meeting of the Finnish Dental Society in Finland. Contact: Taru Ohtola, Training Mgr, Committee for Continuing Education, Akavatalo, Rautatielaisenkatu 6 SF-00520 Helsinki, Finland.

A MESSAGE TO THE DENTISTS OF CANADA

The Canadian Dental Association serves the dental profession — and through the profession the Canadian public — as the authoritative national voice and resource for dentists.

In cooperation with the provincial dental associations and affiliated organizations, the Canadian Dental Association offers services, in both official languages, intended to support and advise all areas of dentistry and to represent, protect, promote and develop the interests of the dentist as ethical practitioner, professional, educator, student, researcher, business person, citizen and individual.

The Canadian Dental Association recognizes a particular responsibility to contribute to the development of national positions and standards related to dentistry, dental education, dental research, dental equipment, dental materials and dental personnel.

The Canadian Dental Association is dedicated to the principle that all Canadians should have the best oral health care it is possible to provide; it actively seeks input from and dialogue with governments, consumers and all those interested in dentistry to enable it to serve more effectively both its members and the Canadian public.

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Offices and Practices

BRITISH COLUMBIA—Fraser Valley: Dynamic, established family practice for sale in Clearbrook, the sixth fastest growing community in Canada. One hour from Vancouver. 38 new patients per month, 1341 sq ft, 3 chairs, 4th op plumbed, congenial staff of six, computerized billing and accounts receivable system. Owner will assist with smooth transition. Contact Dr. M. Corlett: days (604) 854-3120 or evenings (604) 856-9671.

BRITISH COLUMBIA—Vancouver: Practice for Sale: 736 Granville St, Suite 701 (V6Z 1G3). Four full operatories — same location for 25 years. Phone (604) 681-7631 office or 733-9380 home.

BRITISH COLUMBIA—Vancouver: Enjoy the great West Coast lifestyle! Very busy, growing family practice for sale. High gross, 28 hour work week, shared office for great net. 3 modern, equipped operatories, with ceiling tv's, Exan computer system for 5 years. Not inexpensive, but worth it! Serious calls only please. (604) 732-0944.

BRITISH COLUMBIA—Vancouver: Excellent opportunity to have an immediately busy practice in Vancouver with minimum financial outlay. Dentist leaving area. For sale — goodwill only: less than \$40,000. Space rental as percentage of gross, so you pay no capital outlay for leasehold. Call (604) 875-0716 evenings.

BRITISH COLUMBIA—Victoria: PRACTICE OPPORTUNITY with vendor options available including willingness to stay on as an associate. Evenings (604) 598-6167.

ALBERTA: FOR IMMEDIATE SALE. Small town dental practice. Population: Approx. 1700. SUPER PRICE — SERIOUS APPLICANTS ONLY. For further details, inquire 9-4 by phone (403) 753-6898 or 753-6899 or write: Dr. Alex H.K. Lo Prof. Corp., Box 721, Provost, Alberta T0B 3S0.

ALBERTA—Edmonton: Practice for Sale. Excellent opportunity for established dentists or new graduates. Modern, 5-operator general practice located in

downtown professional building. Owner returning to school. Phone (403) 465-5035 after 6 pm.

SASKATCHEWAN: Very busy, family-oriented practice for sale in small Saskatchewan city. Four fully-equipped operatories, including panelipse. Large patient base makes it suitable for 2 new graduates or 1 experienced dentist. Very reasonable selling price. Reply to CDA Box 2420.

ONTARIO—Ottawa: A downtown, well-established general practice for sale with 2 fully-equipped operatories. Active recall system and a steady new patient flow with 85 per cent dental insurance. Practice offers a good gross with low overhead. Owner will assist in transition. Call days (613) 232-9282 evenings (613) 731-1830.

ONTARIO—Ottawa: Attractive, fast-growing practice for sale. Excellent location in busy shopping plaza with high visibility. 1350 sq ft, 2 full operatories, panorex, 3rd operator plumbed and N₂O₂ available. I.V. sedation in use. Growing ortho caseload. Owner returning to school. Tel: (613) 523-5701 (home).

ONTARIO—Ottawa Valley: Family practice for sale — established 22 years. Owner plans retirement and is willing to associate for a specified period. Low overhead — combined residence available too, hospital privileges. Excellent recreation area. Present staff willing to continue. Two operatories, 900 sq ft, air conditioning. Please reply to CDA Box 2438.

SOUTHERN ONTARIO: Busy, established general practice for sale, located within 40 minutes drive from St. Catharines & Hamilton. Immediate income, suitable for new graduate or as a branch office investment. Please reply to CDA Box 2452.

QUÉBEC—Montréal: Family dental practice for sale. Located in the major shopping centre's profession building. One owner for 35 years. A real opportunity to establish a one-to-one dental relationship with patients. Priced for quick sale. Call AM weekdays (514) 487-1241.

NOVA SCOTIA: Practice for Sale. Modern, rural practice near Halifax busy 3 1/2 days per week. To operatories,

plumbed for 3rd plus lab in busy mall. Reply to CDA Box 2454.

NOVA SCOTIA—Springhill: Excellent opportunity for 1 or 2 dentists to purchase a busy, well-established general practice. The 1700 sq ft office is located in a modern medical/dental centre. The facility contains 5 operatories (4 are equipped), private office, consult room, laboratory, panellipse, cep., and 2 intra-oral GE x-ray units. The practice is both successful and enjoyable. Owner is currently attending graduate school. Hospital privileges are available at two local hospitals for dental procedures under local and general anesthetic. Please call (519) 439-9022 or write: Tim Foley, 435 Platt's Lane, London, Ont N6G 3H1.

Associateships Available

YUKON—Whitehorse: Associate required for a very busy multidiscipline dental practice. Excellent opportunity for a young progressive dentist. Contact Dr. R. Pearson (403) 668-3152.

NORTHWEST TERRITORIES: Well-established modern clinic in Yellowknife is seeking a capable, ambitious, quality-minded associate. Experienced dentists preferred, new graduates considered. Opportunities for travel into communities within the Arctic also available. Reply to CDA Box 2449.

NORTHWEST TERRITORIES: Well-established, general family practice requires a capable, conscientious associate. Modern facilities with excellent support staff. Reply to CDA Box 2453.

BRITISH COLUMBIA: Full-time associate needed to assume patients of leaving associate August 1st. Exceptional remuneration and opportunity for future partnership in a busy, progressive and happy practice. (604) 567-9226.

BRITISH COLUMBIA: Associateship is available with the object of a complete takeover in due time of a well-established practice of 50 years. It is situated on West Broadway, the 17th floor of the "Stanzil Building", designed for medical/dental personnel. This relatively new dental office (4 1/2 years) with 2 chairs,

has a commanding view of False Creek, downtown Vancouver and a panoramic view of the mountains. The practice is essentially family-oriented but specializing in fixed and removable prosthodontics. With over 50 years in practice with extensive clinicing and lecturing, an associate could benefit from the many years of experience. Write to: Dr. W.R. Scott, #1702 - 805 West Broadway, Vancouver, BC V5Z 1K1.

BRITISH COLUMBIA—Fort Langley: Associate required for busy practice in our new and modern office in the beautiful Fraser Valley (1/2 hour from Vancouver). Call Dr. Punnett or Dr. Richardson at (604) 888-3811 (8:00 a.m. to 5:00 p.m.).

BRITISH COLUMBIA—Fruitvale: Associate, work to partnership for flourishing dental practice. Come to the beautiful West Kootenay's with its abundance of year-round activities. Send resume to: Box 649, Fruitvale, BC VOG 1L0.

BRITISH COLUMBIA—Kamloops: Busy, quality group practice presently consisting of three dentists has exceptional opportunity for someone seeking a long-term arrangement with the possibility of future buy-in. Position is full-time, available immediately. Contact: Dr. Robert (Bob) McGinn, 414 Arrowstone Dr, Kamloops, BC V2C 1R2. Home (604) 578-7934 Work (604) 374-8191.

BRITISH COLUMBIA—Thompson-Okanagan Region: ASSOCIATE REQUIRED. Exceptional opportunity for full- or part-time associate in busy, quality practice established 10 years. Contact: Dr. Barry R. Goldberg or Rita Barten, Box 188, Lillooet, BC V0K 1V0 or phone: (604) 256-4616 8 am to 5:30 pm or (604) 256-7162 after 5:30 pm.

BRITISH COLUMBIA—Vancouver: PEDIATRIC ASSOCIATE required for busy quality practice. Opportunity for partnership possible. Please reply in confidence to CDA Box 2444.

SASKATCHEWAN—Regina: Associate required for general practice. Excellent opportunity, attractive overhead. Contact Dr. R. Katz (306) 924-1494.

MANITOBA—Flin Flon: ASSOCIATE WANTED Full-time position in long-established, friendly general family practice. An excellent opportunity in active sporting area. Generous % and high remuneration assured. Some

travelling required. Male or female experienced or new grad welcome. For further details, please phone collect evenings. Dr. Malcolm T. Crozier (204) 687-5580.

ONTARIO—Deep River: Tired of the hectic, big city routine? Associate wanted to join very busy, no-frills, small-town dental office. Call (613) 584-2768 and leave message.

ONTARIO—London: Associate required immediately for very busy, established general practice. Team-oriented philosophy and modern facility. Geared to eventual buy-in. Contact: Dr. John P. Demarco (519) 672-9844.

ONTARIO—Ottawa: Associate required for busy, modern general practice in east Ottawa. Excellent opportunity with future prospects for partnership or cost sharing arrangement. Telephone (613) 824-7288.

ONTARIO—Ottawa: Associateship available with partnership possibilities. Established practice, modern and prevention oriented. Call: Dr. Leo Lazare (613) 238-5302.

ONTARIO—St. Catharines: Associate required for modern store-front location. Seeking dynamic, team-oriented individual to join established, highly preventative, general practice with motivated, congenial staff and buy-in potential. In scenic Niagara, minutes from excellent golf and sailing facilities, 20 minutes to US border and 1 1/2 hours from excellent skiing. Reply in writing to CDA Box 2427.

QUÉBEC—Montréal: Established dentist located in a medical building, looking for an associate with possibility of partnership. For information, please call (514) 739-2325.

Auxiliaries

BRITISH COLUMBIA: Permanent, full- or part-time dental hygienist required by a progressive and well-established dental clinic on sunny Vancouver Island. If you wish to grow in an area with excellent climate and recreational facilities, please submit a handwritten reply with your resumé to: Wellington Dental Clinic, 3180 Barons Rd, Nanaimo, BC V9T 4B5. ATTN: Nelson Wong or call (604) 758-1783.

BRITISH COLUMBIA: DENTAL HYGIENIST Full-time hygienist to take

over established hygiene program January 1, 1990 in our preventive, family practice. The Comox Valley is a recreational paradise — skiing in winter and water sports in summer. Vancouver and Victoria are within easy reach of this Vancouver Island Community of 30,000 people. Respond to: Dr. D. Odegaard, 747 Fitzgerald Ave, Courtenay, BC V9N 2R4. Tel: (604) 338-6633.

BRITISH COLUMBIA—Terrace: EXCEPTIONAL EMPLOYMENT OPPORTUNITY FOR DENTAL HYGIENIST. One of the top dental teams in North America requires the skills of a dental hygienist. With patients 175 days per year, leaving ample opportunity for recreation and continuing education. A bright new office and an opportunity to participate in an excellent productivity sharing plan will allow the right individual to grow with this practice. For further information, call Nancy at Dr. Joe Zucchiatti's office (604) 635-2552.

Opportunities Available

BRITISH COLUMBIA: Female dentist looking for partner(s) to share expenses in brand new computerized office. I recently relocated to prestigious Sunshine Hills in the suburb of Delta (35 minutes from downtown Vancouver). I am sharing 3200 sq ft with 3 family physicians with 1600 sq ft allocated to the dental side. There are two modern, well-equipped operatories with a 3rd and 4th operatory plumbed with cabinets and a possible 5th operatory used currently as a consultation room. The rapidly growing, high density surrounding area provides for excellent new patient flow and referrals. For info, call (604) 596-3072 (h) or (604) 590-4310 (o) and ask for Dr. Susan Braun.

BRITISH COLUMBIA—Pender Harbour: FOR SALE. Busy, part-time general practice for sale on beautiful Sunshine Coast close to the natural elements. Two hours travel time from Vancouver. Strong recall/maintenance program and good new patient growth. Ideal for new grad or for a working retirement. Call after 7 pm: Dr. Dan Kingsbury (604) 886-4535.

BRITISH COLUMBIA—West Coast: Financial independence really is attainable. Established 10 year practice. High gross. Low overhead 40% Selling price near cost of equipment and inventory. Four fully-equipped operatories, Fifth is plumbed. Owner has other interests. Please contact CDA Box 2459.

SOUTHERN ALBERTA: PRACTICE OPPORTUNITY. Progressive rural practice for sale or associateship leading to purchase. Two operatories, pan and lab. Terms negotiable. For more information, contact: Annette (403) 345-3131.

ONTARIO: ORAL AND MAXILLO-FACIAL SURGEON Exceptional opportunity for enthusiastic, motivated, skilled individual in busy, prestigious, well-established, broad-based practice. If you're that special surgeon who would like to live in a nice community, enjoy outstanding quality of life, leading to partnership with excellent income potential. Please contact CDA Box 2458.

ONTARIO—Hillsburgh: General practice for sale or full-time associateship position available. Located 45 minutes from Toronto. Established in 1977. Good opportunity. Any questions or information required, please call (416) 275-7256.

ONTARIO—Toronto: ORAL SURGERY for sale. High traffic, 2 ops, 1 exam room, full-scope practice, modern facilities. Reply to CDA Box 2439.

QUÉBEC—St. Lambert: Do you have many referrals from the South Shore? Are you looking or thinking of setting up a satellite or permanent practice on the South Shore? Don't invest any capital; I have a complete, modern, new set-up. If you are interested, call Dr. Paul Tabakman at (514) 671-1217 or (514) 247-3193 residence.

NORTH DAKOTA: Busy endodontic practice established 12 years in family oriented community needs endodontist for association leading to purchase. Close to prime Minnesota lakes and Dakota hunting. Send resume or call Dr. Michael K. Gavin, 2534 South University Dr., Fargo, ND 58103. (701) 235-1113.

Opportunities Wanted

ONTARIO: Dentist with 6 years general practice experience seeks associateship in a caring, patient-centred family practice. Opportunity to buy in or purchase desired. Please contact Dr. D. Raynor, General Delivery, Dease Lake, B.C., VOC 1L0. Telephone: (604) 778-3288.

ONTARIO—Niagara Peninsula: Thinking of retirement? Experienced dentist wants to purchase a well-established general practice in the Niagara Peninsula region of Ontario. Will consider associate-

ship with direct view to purchase. Please reply to CDA Box 2457.

NOVA SCOTIA: PROSTHODONTIST extensive experience in fixed/removable/maxillofacial/TMJ seeks full-time associateship in specialty practice or large general dentistry group practice in Ontario, Manitoba, Saskatchewan or Alberta. Would consider salary/percentage/or combination. Reply to CDA Box 2455.

Equipment

ONTARIO: Equipment Sale. Midwest High and Slow speed handpieces and con-trangle. Bags of Hu-Friedy hand instruments — periodontic, restorative, etc. Denar and Hanau articulators. Surveyor impression trays. Endodontic supplies. Burs. All used in dental school only. Ideal for new practice. Contact: Philip du Toit, week-ends (807) 775-2054.

ONTARIO: ARTICULATORS WANTED. Hanan H2 and University series, Denar semi-adjustables, Slidematic or Denar facebows. Let someone put your old articulators to use. (416) 597-0211.

NOVA SCOTIA: FOR SALE. Equipment for complete dental office. Two Elegan chairs, Cox units, lab and utility equipment (compressor, etc). Reply to CDA Box 2454.

Vacation Rentals

BRITISH COLUMBIA: CDA CONVENTIONING IN VANCOUVER? Why not combine your trip with an unforgettable stay in a world-class resort — Whistler, BC. 1½ hours from city — mountains, lakes & fresh air. 3 bed, 3 bath luxury condo (steam room & jacuzzi) steps from village and golf course. Available convention dates & others (416) 239-4393.

Advertiser's Index

Anchor Implant Systems Inc.	646
Ash Temple Ltd.	IFC
Astra Pharma, Inc.	629, 653
Aurum Ceramic Dental Laboratories Ltd.	622
Braun	614
John O. Butler Company	656
CDSPI	604, 638
CPL Services.	649
Canadian Pharmaceutical Association.	650
Classique Cards	Insert
Core-Vent Corporation	611
Dentsply Canada Ltd.	IBC
HCC Hygenic Corporation	613
HealthCare Communications	635
Johnson & Johnson, Inc.	630
McNeil Consumer Products Company	601, 640
Medi-Dent Services	642
Nobelpharma, Inc.	606
Ontario Ministry of Health	609
Plax	620, 621
Premier Dental (Canada), Inc.	609
Procter and Gamble, Inc.	580
Progressive Solutions	625
Rutland Pharmaceuticals	582
Teledyne Water Pik Canada	602, 603
Université de Montréal	624
University of British Columbia	649
Valudent, Inc.	641
Warner Lambert Canada, Inc.	OBC

INSTRUCTIONS FOR CONTRIBUTORS

The Journal of the Canadian Dental Association welcomes the submission of previously unpublished articles, critical reviews of material on advances in dentistry and clinical reports for consideration for publication. Material is accepted for publication on the understanding that it is submitted solely to the Journal and that it has not previously been submitted elsewhere.

Scientific Articles:

are contributions dealing with research, diagnosis and treatment of dental disease, studies in education, clinical and laboratory research and other detailed investigations pertinent to dentistry and related fields. The text should not exceed 3,000 to 4,000 words (approximately four Journal pages).

Clinical Reports:

are brief (up to 2,000 words) reports, case histories and clinical observations. References should be limited and minimum number of illustrations used.

Opinions:

fully documented (800 words or less) are welcome to be reviewed for publication at the discretion of the editor.

Manuscript Requirements:

Submit three (3) copies (original and 2 duplicates) to the Editor, Journal of the Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6. All graphs, photographs, charts and tables must also be submitted in triplicate. Authors are also requested to submit their article on computer disk if available. IBM compatible material is preferred. For more details, please contact the editorial staff.

A covering letter designating one author as correspondent with a full address and telephone number must accompany the article. All scientific articles are subject to review by selected consultant referees. Acceptance or rejection of an article for publication is based on the referees' reports plus editorial consideration.

The editor reserves the right to edit manuscripts for stylistic consistency, clarity and conciseness. The author named as correspondent will receive a copy of the edited manuscript for checking prior to publication. Authors will also be able to proofread their article at the galley stage; however, **no changes** other than typographical corrections may be made. If the author does not respond

within 48 hours of receipt, acceptance will be assumed. **No exceptions** will be made.

Manuscript Format:

All material (title, abstract, text, references, tables and legends) should be typed, double-spaced on one side of 8½ × 11 pages with margins of at least one inch on all four sides.

Article Titles:

should be descriptive but concise and suitable for indexing. Lengthy titles will be subject to editing.

Abstract:

stating the purpose, results and conclusion of the work must accompany all manuscripts. All abstracts will be translated into French (or English as the case may be). Abstracts should be approximately one typewritten page (250 words in length).

Authors Affiliations:

The authors' names, degrees, and university affiliations must be provided. Authors are responsible to disclose to the Editor any financial interests they may have in products mentioned in their article.

References:

should be selective. They must be keyed to the text and numbered consecutively. Journal references must give the author's name, article title, abbreviated journal name, volume number, first and last page numbers of articles and year of publication.

1. Hechter, F.J., Symmetry and dental arch form of orthodontically treated patients. *JCDA* 44:173-184, 1978.

For books gives the author's name, book title, location and name of publisher and year of publication.

2. Kilpatrick, H.C. *Work simplification in dentistry*, ed. 2, Philadelphia, Saunders, 1964.

Illustrations:

should be of high professional quality for reproduction.

All photographs should be submitted in triplicate as glossy black and white prints. Graphs and line drawings should be of professional quality and the original drawing submitted or a black and white glossy print.

Articles with colour illustrations will be accepted on an individual basis after consultation with the Editor. Authors should

submit a colour slide and two glossy colour prints of each illustration.

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'Mandibular anterior crowding'

The March, 1989, Canadian Dental Association Journal contained an excellent original scientific summary concerning the pathological potential of the unerupted third molar by Drs. Stephens, Kogan, and Reid. Our patients often ask, "What are the odds of a serious problem developing if we leave these teeth alone?". I agree with the conclusion that serious sequelae are rare.

I take exception to the authors' scant attention given to the question of "mandibular anterior crowding". The statement that "removal of erupting third molars to prevent crowding lacks scientific support", is false. A single reference to a NIDR consensus conference dated 1979 is a reflection of pre-1979 data at best. The January, 1989 issue of the American Journal of Orthodontics and Dentofacial Orthopedics contains a review article entitled, "Role of Third Molar in Cause of Late Lower Arch Crowding". This article quotes sixteen references of which seven are published original work dated post-1979. I would suggest reference to this article.

The health-care dollar is usually associated with program related funds, i.e. government, insurance, etc. The health care dollar spent by individuals in a field such as orthodontics is seemingly down-rated due to the lack of pathogenicity related to malocclusions in general. Patients and parents of young patients, however, do not like spending their time, effort, and health care dollar on orthodontic therapy to see unnecessary relapse in lower anterior crowding. We should not confuse our epidemiologic priorities with those of our day-to-day patients.

In summary, research continues to investigate the causes of late mandibular anterior crowding. As the effects of the third molar remain a significant issue, we should not confuse pathogenicity questions with bio-mechanical and growth issues.

Barry D. Hoffman, DDS, MS
Certified Specialist in Orthodontics
Calgary, Alberta

Editor's Note: "It's My Opinion. . . ." is an opportunity for individuals to encourage open dialogue on important dental issues and concerns. If you have a strong opinion and wish to share it with the Journal readers, please write to the Editor.

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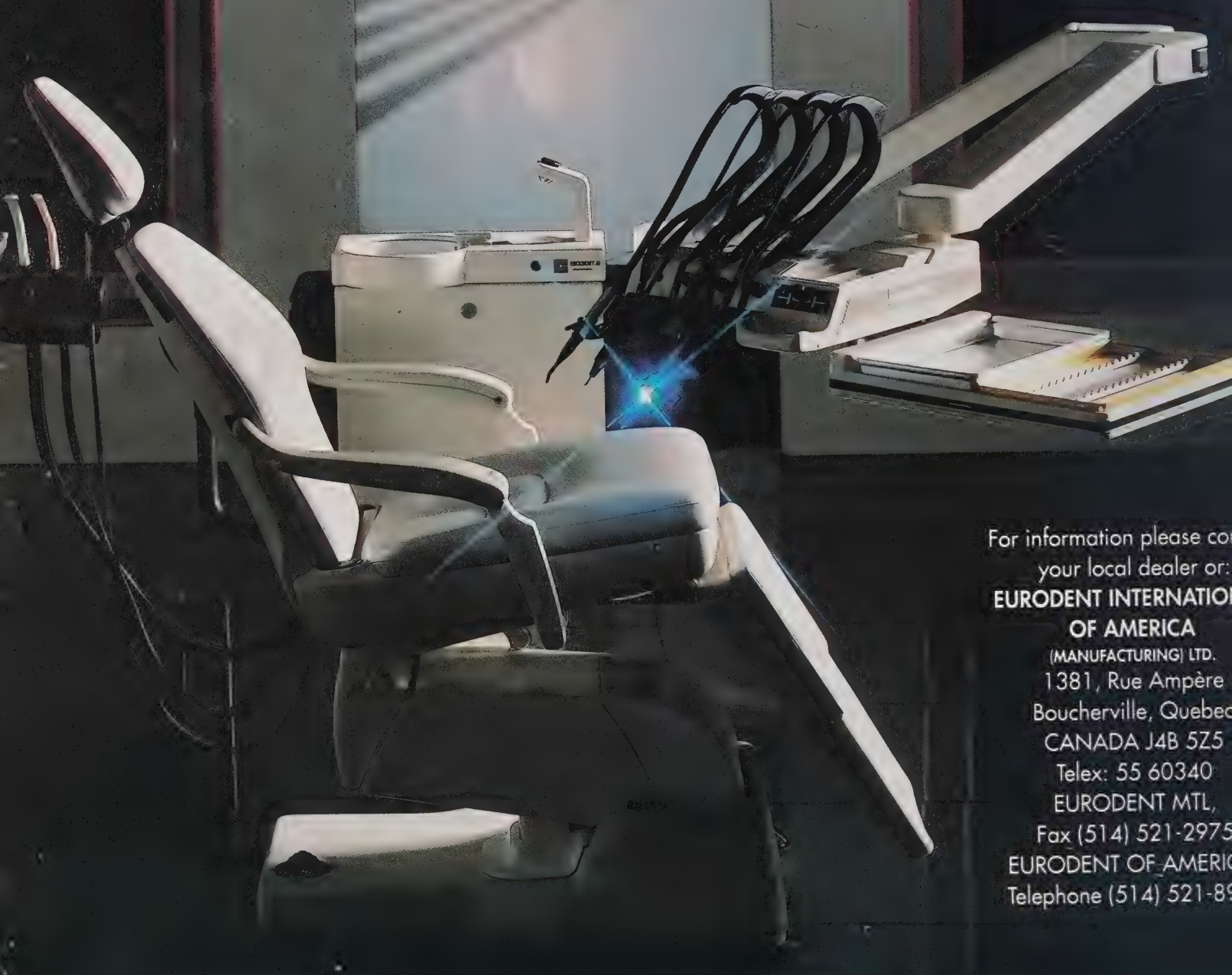
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The Canadian Dental Association serves the dental profession — and through the profession the Canadian public — as the authoritative national voice and resource for dentists.

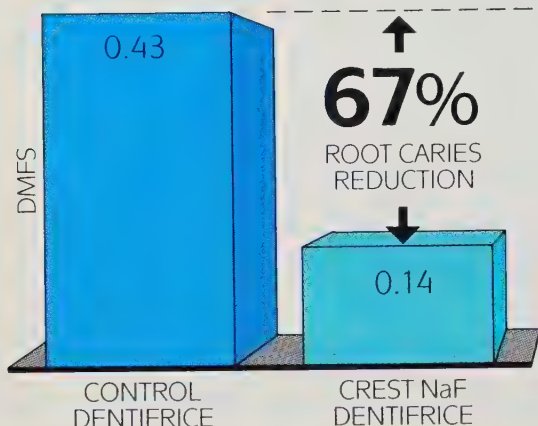
In cooperation with the provincial dental associations and affiliated organizations, CDA offers services, in both official languages, intended to support and advise all areas of dentistry and to represent, protect, promote and develop the interests of the dentist as ethical practitioner, professional, educator, student, researcher, business person, citizen and individual.

CDA recognizes a particular responsibility to contribute to the development of national positions and standards related to dentistry, dental education, dental research, dental equipment, dental materials and dental personnel.

CDA is dedicated to the principle that all Canadians should have the best oral health care it is possible to provide; it actively seeks input from and dialogue with governments, consumers and all those interested in dentistry to enable it to serve more effectively both its members and the Canadian public.



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References: 1. Jensen ME, Kohout F: The effect of a fluoridated dentifrice on root and coronal caries in an older adult population. JADA 1988; 117:829-832. 2. 1985 NIDR adult oral survey. Oral Health of United States Adults (1985-1986).



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Crest

The clinical recommendation for root caries

JOURNAL

Canadian Dental Association
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September 1989

Vol. 55 No. 9

Feature Articles

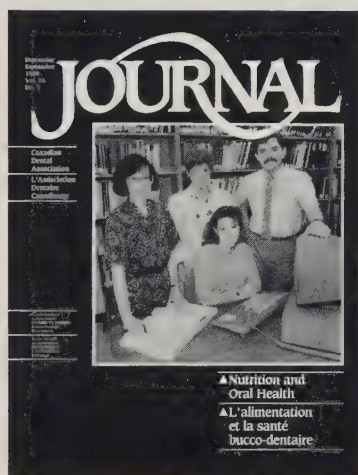
Diet and Dental Caries	699	R.C. Burgess, BSc, DDS, MSc Ms. N.E. Burgess, BSc, MEd
Vitamin C and Oral Health	705	A. Barry Rubinoff, DDS, DipPaedo, <i>et al.</i>
Nutritional Assessment	709	A Computer-Based Dietary Analysis G.W. Thompson, DDS, PhD, FRCD(c) J.A. Hargreaves, LDS, MChD, MRCD(c), <i>et al.</i>
Caries prevention with Xylitol	713	Barry R. Ashpole
Xylitol in Chewing Gum	717	A discussion on developing CDA guidelines for the recognition of food products with dental therapeutic claims. Hardy Limeback, BSc, PhD, DDS F. Michael Eggert, DDS, DipPerio, MSc, PhD
Fluorides	721	Mechanisms of Action and Recommendations for Use Colin Dawes, BSc, BDS, PhD

Scientific

Facial changes in children treated with the activator appliance	727	A lateral cephalometric study Antonios H. Mamandras, DDS, MSc, <i>et al.</i>
Orthodontic treatment of impacted first permanent maxillary molars	733	Antonios H. Mamandras, DDS, MSc, <i>et al.</i>
Diagnostic différentiel des masses cervicales	737	Partie I Rénald Pérusse, DMD, MD

Departments

671	Editorial "Can you see the difference?"
672	President's Column "CDA — the Next Generation"
673	News Update
681	CDA RSP
684	Brieflies
686	Library/Resource Centre
687	Book Reviews
690	Letters to the Editor
695	Practice Prosperity '89
712	Obituaries
743	Announcements
745	Marketplace
747	Advertisers' Index
749	It's My Opinion!



The Sydney Wood Bradley Library/Resource Centre at CDA headquarters in Ottawa has a wealth of dental information available to the dental profession across Canada — from in-house resources to MEDLINE searches. An efficient library staff is on hand to provide these services. Seen above with an Ottawa dentist doing research, are standing, back row, from the left: Marsha Maslove, Library Technician; Suzanne Donahue, Library Clerk, and Dr. Gary M. Cousens, an Ottawa Oral and Maxillofacial Surgeon. Seated, foreground, is CDA Librarian, Martha Vaughan. (Cover Photo by Pat McGrath)



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The amount of information generated today about infection control is overwhelming. To clarify the confusion, ignore the claims and focus on the facts.

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¹ American Dental Association Council on Dental Therapeutics. Acceptance of (synthetic phenol) disinfectant for instruments and equipment. JADA 110 394, 1985



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“Can you see the difference?”

This past spring during a two-day meeting of a very prestigious group of dentists in a mid-western city of United States almost an entire afternoon was given over to a dentist promulgating the value of his personalized Dental Newsletter. He took his audience through the step-by-step procedures of concept, content, layout and design. Even explaining how he recruited the neighborhood children to deliver thousands of copies throughout the community.

Let there be no doubt. No one is questioning this dentist's knowledge, ability or skills. It is assumed these are exemplary. The question is the methodology of advertising in a self-generated, self-congratulatory, self-seeking newsletter which to many Canadian dentists is blatant **advertising**.

And you say, “It can't happen in Canada”. Don't bet next month's income on that statement. At this moment there is a Canadian organization soliciting dentists to subscribe to their services to produce a customized newsletter. The firm's own statement in a mail-out to every dentist in the country encourages them to “expand your mailing to the entire community and find that many neighbors who don't already have a family dentist will make the decision to visit you first”.

Many, including governments, consumer groups, the media and dentists, piously say a “free market economy” is the cornerstone of a modern society. “Open dentistry wide to advertising”, they advocate. “It will create competition and fees in turn will find a lower level”. Yes, for most consumer products, but for dentistry there must be extreme caution.

A very well known detergent TV commercial has had heavy coverage in recent months. It displays two men comparing the whiteness of their shirts and one asks the other, “Can you see the difference?” Certainly anyone should be astute enough to compare detergents, whether one cleans whiter than the other. Or compare a “Big Mac” with a “Whopper”, or “Nikes” to “Reeboks”. These are definable products for which the consumer can make a reasonable capable judgement. It doesn't matter how much one firm spends on advertising. Ultimately the consumer makes a rational comparison.

Can this be done in dentistry? Certainly not! Even dentists would be hard pressed to make a definitive quality judgement on a recently placed crown, or in fact any treatment, in their own mouths. Dental treatment is not like buying detergents, hamburgers or running shoes. Dental consumers may be attracted by the “glitzy” advertising or “cutesy” newsletters but they just can't make a practical judgement as to the quality of their dental treatment — they “can't tell the difference”.

Personal advertising benefits no one. No study has ever shown it promotes better treatment by dentists or whether fees are lowered to the benefit of the dental consumer. Advertising itself has never been a bargain. Eventually those dollars spent must be generated from within the practice.

On the other hand institutional advertising benefits everyone. The public is enlightened; the profession's integrity, trust and rewards are enhanced. the CDA's “Dental Awareness Plan” — now into its fifth year — has gained international recognition as a model of what a profession may accomplish with a unified message.

Dentists as individuals, their various societies and associations, before advocating any advertising policy forcing patients into a dilemma of trying “to tell the difference” should seriously consider the consequences. Patients deserve the best dentists can offer.

P. Ralph Crawford, DMD

Editor: Journal of the Canadian Dental Association

President's Column

CDA — The Next Generation

During our world-class convention in August, I received the chain of office from Jack Niedermayer. What an auspicious beginning for my tenure as CDA's seventieth President! Before introducing the new Management Committee and members of Executive Council, I'd like to take this opportunity to extend my congratulations to Dr. Michel Jahjah, Convention Chairman, and his committee, and Miss Linda Teteruck, Director of Communications, for a superb effort. Without a doubt, Vancouver hosted one of the most successful CDA meetings to date.

It will be a year of transition for CDA, as the new management structure swings into place. Vancouver witnessed the election of Dr. Les Allen from Winnipeg, Manitoba, as the first full-term Vice-President. As well, Dr. Gilles Dubé of Lachute, Québec, who served a compressed term as Vice-President, became President-Elect. Dr. Jack Niedermayer will be CDA's last full-term Past-President. Following my term, I will serve six months as Past-President before the position is eliminated.

The new management structure provides future presidents with an extra year of apprenticeship before they move to the head of the table. In the spirit of this change, Dr. Les Allen has agreed to coordinate CDA's Government Relations activities. Dr. Allen will maintain regular contact with Health and Welfare on continuing dental concerns and liaise with the Taxation Committee in its communications with the Departments of Finance and Revenue Canada on matters that concern the profession and oral health. He will also act as host for government receptions and dinners. Welcome aboard, Les!

With Central Canada and the mid-West well-represented by Management Committee team members, CDA looked to the coasts for national CDSPI representatives. Dr. Ron Markey of Vancouver, will serve as Member at Large to CDSPI, while Dr. Ray Wenn, Executive Council member for the Atlantic provinces, will be the executive liaison to the Council on Insurance and Investment, Dr. Wenn also continues as liaison for the revitalized Ethics Committee.

Other senior Executive Council members will shoulder major responsibilities in the coming year. Dr. Bernie Dolansky, Ottawa, will chair the Membership Committee, the Electronic Data Interchange project and act as executive liaison to both the Third Party Dental Plans Committee and the Professional Resource Utilization Committee (PRUC).

Dr. Brian Sigfstead, Edmonton, is the executive liaison to the Publications Committee and to the Council on Education and Accreditation, which on October 1, will officially become two separate councils. Dr. Sigfstead will then liaise with the Council on Education.

New faces on Executive Council, Dr. Barry Dolman of Montreal, Dr. François Bourassa of Regina, and Dr. Ron Smith of Duncan, B.C., have also been given some weighty responsibilities.

Dr. Dolman is liaison to the Dental Specialities Committee and also, to the new Community and Institutional Dentistry Committee — an area needing both national attention and federal/provincial cooperation.

Dr. Smith, Past-President of the B.C. College, becomes CDA's executive liaison to the Student Affairs and Information Services Committees. In light of B.C.'s continued Gibraltar-like support of our National Dental Awareness programs, it looks like a very promising year ahead.

Dr. Bourassa will bring his wisdom and experience to the Council on Constitution and Bylaws, and, equally important, serve as liaison to the Dental Materials and Devices Committee and the Consumer Products Recognition Committee — both of which are major activities for CDA.

I am also pleased to welcome three new Council/Committee Chairmen to the team. Dr. Toby Gushue of St. John's, Newfoundland, has accepted the heavy workload as Chairman of the Third Party Dental Plans Committee. Dr. Gordon Thompson, former Dean of the University of Alberta's Dental Faculty, is a natural to chair the new Council on Education. Dr. Jack Gyfe of Weston, Ontario, has agreed to "kick-start" the new Community and Institutional Dentistry Committee.

The addition of these leaders in Canadian dentistry to the group of outstanding Chairmen already in place lifts my spirits, expands my optimism and confirms my belief that this will be an exceptional year for the CDA.

*Kevin L. Roach, BSc, DDS,
President of the Canadian Dental Association*

CDA Tax Seminars Popular

The complexity of the Canadian tax system evokes numerous questions; especially since the April 1989 federal budget. More than ever before dentists are seeking ways to lessen their tax burdens. Many have discovered the CDA Tax Seminar is where specific answers for financial problems may be found.

The brainchild of Dr. Robert Hicks, CDA's Taxation Committee Chairman, the one-day Taxation Seminar takes dentists methodically through a program specially designed for their needs. Invited guests, each an expert in a particular area, demonstrate the financial benefits of systematic tax planning.

A CDA membership benefit, the Taxation Seminars have been successfully held over the past two years in Toronto, Montreal, Vancouver, Halifax, Moncton and Winnipeg. It is Dr. Hicks' contention that dentists will benefit under a complex tax system when properly prepared with the right information. And who better would know. It was Dr. Hicks who championed the cause of dentists in Continuing Education, RRSPs, Management Companies, Customs and Excise.

Winnipeg's CDA Taxation Seminar

June 2, 1989



Dr. Robert Hicks: Dr. Taxation to Canadian dentists, explains the rules, laws and regulations of conventions and continuing education. He cautioned his listeners, "Costs must be reasonable — don't be greedy. Remember, pigs get fat, hogs get slaughtered!"

Dr. Hicks amused participants when he related how nine years ago he discovered, in his quest for Continuing Education deductions, Revenue Canada classified a dentist's brain as a capital asset and

"any improvement to a capital asset was not an allowable deduction." However, on his second time around, Dr. Hicks convinced government that every piece of a capital asset requires maintenance and maintenance was a deductible expense. "By demonstrating Continuing Education was 'maintenance' for the brain, I was able to convince Revenue Canada full deductible expenditures were logical. We've had them accepting this fact ever since."

Referring to the proposed Sales Tax Reform, Dr. Hicks demonstrated the effects of the "Goods and Service Tax." Indications are that dentistry will be exempt but caution and vigilance is needed. "Stay tuned," says Dr. Hicks, "They are saying some dental services will be taxed. What does that mean? Will there be a tax on purely cosmetic dentistry?"



John D. Donald: A chartered accountant in the area of taxation is with the Winnipeg office of Dunwoody. He methodically guided seminar attendees through the personal and professional impacts of the 1989 Budget as it moved away from

the traditional deductions for personal exemption to a system of tax credits.

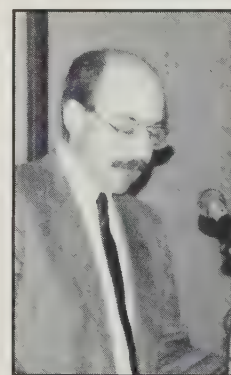
Mr. Donald detailed numerous changes in the taxation rules, among which are:

- **Charitable Donations:** the first \$250 of donations will be eligible for a tax credit of about 26 per cent. Any donations above this amount will result in a tax credit of around 45 per cent of the donation. It may be advantageous to bunch two years' contributions into one to obtain maximum credit. Also, ensure that all donations are claimed by only one spouse. In actuality, for the average donor the difference between 1987 and 1989 is "Not a big

deal. It amounts to about \$5 more per \$100 gift."

- **Medical Expenses:** there is a significant change. Previously treated as a deduction from income they are now claimed as a tax credit of approximately 26 per cent of medical expenses incurred. Those medical expenses of over three per cent of net income or \$1,500, whichever is less, are eligible. The new eligibility of \$1,500 of medical expenses or more is an increased benefit to high income earners.
- **Automobile, Meals and Entertainment:** Home Office Expenses have all undergone revision under new Taxation Rules and in all cases there are more restrictions for eligibility. Business-used automobile expenses must be accurately documented. Meals and entertainment expenses for promotion purposes will be treated as 80 per cent deductible for the dentist. Home office expenses will only be allowed if a majority of the dentist's business is done in the home office.

Mr. Donald went into considerable detail on the various changes in tax shelter legislation and the government's direction of severely restricting an individual's ability to utilize them. He cautioned particularly the investor's inclination to purchase for tax savings alone without considering the economic viability of the investment itself.



Joel A. Weinstein: BA, LLB, Senior partner with the Winnipeg legal firm of Aikens, MacAuley and Thorvaldson. A specialist in corporation tax, he spoke on the advantages of the Professional Management Companies.

Mr. Weinstein traced the 15 per cent fee, or mark-up, of a management company back to a test case of a legal firm

a number of years ago. He referred also to the early 1980s when Revenue Canada challenged the management company concept and he praised the Canadian Dental Association for its leadership role in convincing government the only thing the professions requested was as fair and equitable treatment as any other business.

A written agreement between the dentist and the management company is mandatory. It must outline precisely the services the company provides for the practising dentist. Normally all the aspects required to operate the "business" of a practice come under the purview of a management company.

A professional management company is only eligible for the lower corporation tax rate of 22 per cent on its first \$200,000 annual income. After that full tax rates apply.

Reference was made to the possibility of income splitting by having other family members own shares. Certain guidelines were discussed regarding trust arrangements for the dentist's children to be involved in the ownership and profitability of the management company, or of an incorporated professional practice.



Jake E. Harms, BA, LLB has been a member of the Tax Department of the legal firm of Aikins, MacAuley and Thorvaldson since 1985 and a member of the Canadian Tax Foundation. He led the Winnipeg seminar audience in a

lecture on the merits of income splitting and incorporation. Mr. Harms reminded listeners that incorporating does not protect the dentist from professional liability.

The way income is earned through a corporation is taxed at two levels. First the corporation is taxed on its profits and then the shareholders are taxed through distributions out of the after-tax profits. The whole tax system has gone to some length to achieve integration and it attempts to assure that individuals who earn their income directly from a corporation receive the same after-tax earnings as the individual who earns income through a corporation and then takes it out through dividends. This is the dividend tax credit system.

An advantage in the tax system can be achieved through income splitting . . . a technique of shifting income from a high taxpayer to one who is at a lesser level. Mr. Harms used as an example a corporation where the dentist owned 60 per cent of the common shares and the dentist's wife and/or children own the remaining 40 per cent. He cautioned that the proper steps be taken to avoid the attribution rules.

Using the same 60/40 per cent scenario, an advantage may be gained on the sale of the assets and the subsequent capital gains, particularly if the dentist has already used up his \$100,000 exemption.



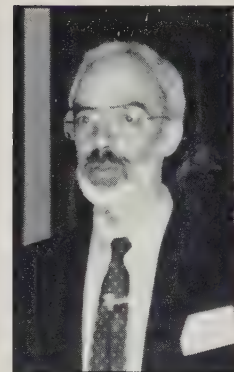
Lisa M. Collins: BSc, LLB: Obtaining her Bachelor of Law degree in 1983, Ms. Collins has been associated since with the Winnipeg firm Aikins, MacAuley and Thorvaldson, specializing in the area of taxation law.

Ms. Collins introduced her audience to GAAR — the newly enacted General Anti-Avoidance Rule. Whenever a transaction is viewed by the government as having been enacted by an individual, primarily for a tax benefit, then such a benefit may be ignored by Revenue Canada by the application of the Anti-Avoidance Rule.

Certain aspects of the Rule may be grand-fathered. Ms. Collins explained, "As you might expect, the definition of tax benefit is very broad and includes not only a reduction or avoidance of taxes but also includes a deferral of taxes." Dentists are cautioned to view management companies and incorporation transactions with care and concern that GAAR may not be applied.

Ms. Collins concluded her address talking about interest deductibility. She made special reference to a recent significant court decision called the "Scott Case" where a shareholder used personal borrowed money to provide an interest-free loan to his corporation and to whom he did not charge interest. The matter of decision involved Mr. Scott deducting the personal interest charged him by the lending institution. The court ruled against Scott because it noted the borrowed money was not used to earn income.

The case is interesting in that it demonstrates an actual uncertainty between established policy and interpretation bulletins of the tax department and the law.



Charles J. Rubin: CA, BSc. A former tax assessor with Revenue Canada and currently a partner in the firm of Laventhol and Horwath specializing in income tax. Mr. Rubin began his lecture by indicating there has been a noticeable

change in the attitudes of Revenue Canada. There used to be a time when the taxpayer was given the benefit of the doubt. However, over the last few years that has reversed itself; they are rougher. The taxpayer is often guilty until proven innocent. The severe financial difficulty of the government at the present time contributes to changing philosophies.

At one time one could do a lot of tax planning and didn't have to be concerned with the traps. People are finding themselves in the position where they are more concerned with doing things right than the actual tax planning because the rules have been changed so drastically.

Mr. Rubin dealt with many of the tax rules with which individuals must concern themselves.

Some of the highlights are:

- **Interest Expense:** is an allowable expense if the money borrowed is used to earn business or property income. However, when the source of the income disappears, even if sold at a loss, the interest may not be deducted. Generally, Revenue Canada is having a great deal of difficulty with Income Expense. It is looking at the whole area very closely and is proposing new guidelines.
- **Capital Gains and Losses:** the whole area has changed dramatically. Prior to 1972, capital gains were not taxed at all and then one half of the gain was included in income. Now in its efforts to gain more money the government has changed the inclusion rates. In 1988 and 1989 it becomes two-thirds of the gain and in 1990 and subsequent years, three quarters of the gains are included.

- **CNIL Account — Cumulative Net Investment Losses.** It started in 1988 and has been a tremendous shock to many investors. It is the investment income minus the investment expenses. Investors will want to ensure they keep their CNIL balance to a minimum.
- **RRSP Contributions:** The government has promised for some years that the levels of contribution would increase from the current \$7,500 but keeps postponing the decision. The April 27 budget announced further postponement until 1991.

Another change is that in 1991, when the contribution limit is supposed to increase, instead of 20 per cent of income being the maximum contribution, 18 per cent of the previous year's earned income will be the maximum dollar contribution limit. By 1991 if one wants to make a full contribution it will be necessary to have no less than \$64,000 of earned income the preceding year.

Also, under the Pension Reform proposals, tax-free transfers (roll-overs) of pension income to RRSP's will be discontinued for the 1990 and subsequent taxation years.

- **Goodwill:** "One of the good things that happened!" Some of the rules have been changed that may be of advantage to both the seller and buyer of goodwill. * Percentage rates of income and expense have changed from 50 to 75 per cent.
- **Tax Shelters:** One of Mr. Rubin's closing remarks was not very encouraging: "There aren't any good ones. All I can tell you what Revenue Canada has done about tax shelters is less desirable. There is no such thing as a MURB anymore. They have reduced the depreciation rates on buildings from five to four per cent. They have something now called "at risk rules". They have reduced the capital cost allowance on films from 100 per cent immediate to 30 per cent on a declining balance. For hotels, restaurants, and nursing homes the capital cost allowance is restricted to the income earned from those investments. The emphasis is now on good investments . . . you are no longer looking at those big write-offs, you're looking for investment."

* The taxable portion of Goodwill will be eligible for capital gains exemption. However, the portion of Goodwill that is included in income, or is treated as a capital gain, will be increased from 50 per cent to 75 per cent.



Left to Right; Dr. Robert Hicks, Mr. Joel Weinstein and Mr. Jake Harms, with Ms. Lisa Collins (at podium and not seen in the photo) conducting an active question and answer session with the Taxation Seminar audience.



John Donald, CA, discusses tax implications with dentists during a break in the Taxation Seminar. Here he outlines the difference between Canadian and American estate tax rules. He specifically cautioned Canadians with any kind of investment in United States to check the effect of these rules. Many people have been caught by surprise!

Future tax seminars

The success of the CDA Tax Seminars has resulted in further bookings. A Seminar is planned in St. John's, Newfoundland, on November 24, 1989.

Many dentists have attended the day's program with their spouses and it is becoming more commonplace for dentists to be accompanied by their financial planners. One enterprising Winnipeg dentist who could not attend himself sent his accountant!

The Tax Seminar is a CDA member benefit: Don't miss it!!

"Believe It or Not"

The reason we have a united country, the reason why it will stay united, is because the Canadian people everywhere are prepared to pay the price of that in money terms, in tax terms.

(Pierre E. Trudeau, June 17, 1968)

Dental officer honored for outstanding bravery

Colonel Victor J. Lanctis, MB, CD, BA, DDS, FICD, Commanding Officer of 14 Dental Unit, Air Command Headquarters, Westwin, Manitoba, is a modest man who carries out his military responsibilities quietly and efficiently.

But Col. Lanctis, 48, is no ordinary military officer. He is a recognized outstanding Canadian hero.

Earlier this year, Col. Lanctis received the Medal of Bravery from Governor-General Jeanne Sauvé. The honor was in recognition of just one of his several selfless acts of heroism when he saved the life of a woman trapped inside a burning automobile following an accident between Ottawa and Montréal. The Colonel had swung into action in conditions of great personal peril.

This however, was the third time Col. Lanctis had saved another person's life.

An article in a recent edition of *The Sentinel*, the Canadian Armed Forces magazine, provides a graphic description of Col. Lanctis' latest act of outstanding courage. It was based on an interview with the Colonel, and was written by Capt. Steve Wills, a public affairs officer with the DND office of information in Winnipeg.

This Journal was given special permission to reprint that article and the text follows.

Three times . . . a winner

Most ordinary people never risk their own life — even once in their lifetime — to save the life of a fellow human being. But Col Victor Lanctis is no ordinary person. He's tall and gentle, unassuming and friendly. Sitting in his Winnipeg office, he bears little resemblance to the stereotyped hero. But the Air Command dental officer is a hero. Col Lanctis has risked his own life on three separate occasions to save the lives of four people over the years. And his latest courageous action earned him an Ontario Provincial Police Commissioner's Citation.



Governor-General Jeanne Sauvé confers the Canadian Medal of Bravery on Col. Lanctis at a ceremony in Government House in Ottawa.

His most recent life-saving action occurred May 8, 1987. Col Lanctis was driving home to his family in Ottawa when he saw a thick column of smoke rising in the distance. When he rounded a bend in the highway, he came upon a two-vehicle accident which had taken place only minutes before. A crowd had formed at the scene of the head-on collision.

"Initially, I thought the car occupants were standing in the crowd watching their vehicles burn," says Col Lanctis. "Then I noticed one of the drivers — badly injured — lying on the ground a metre or so from her car." Col Lanctis immediately dragged her to safety. "She mumbled something about a passenger in her car, so I decided to check both cars for passengers, starting with the car that was in the worst shape," he recalls.

When Col Lanctis reached the car, the flames were intense from the leaking gas tank, and he was forced back by heat and choking fumes. He grabbed a blanket from his own car to shield himself and approached the car again.

By this time, the car was totally engulfed by flames. "The crowd yelled at me to get away from the burning cars before the gas tanks exploded," the colonel remembers. But he was oblivious to their warnings, knowing the passengers were still trapped inside. The tremendous heat and acrid smoke forced him back once more, and he felt frustrated at not being able to help.

"By then the flames were spreading to the second car and I realized I'd better hurry in case anyone was trapped inside," he says. He glimpsed the head of an older, grey-haired woman when he

looked inside the car. The force of the accident had compressed her body into the space below the dashboard, leaving only her head visible. "It was just before Mother's Day and my only thought was that this woman was somebody's mother. I knew I had to save her," confesses Col Lanctis with an almost embarrassed tone in his voice.

With the blanket shielding his upper body, flames spreading to the car engine and the crowd still yelling at him to get back, Col Lanctis wrenched at the car door, trying to open it. "The heat and smoke drove me back, giving me time to regain my breath and strength to try again," he says. This time, he opened the door and tried to pull the unconscious woman from the car. But to no avail. The fire was gaining and again, he was forced to withdraw.

This time, however, a man stepped forward from the crowd and helped Col Lanctis get the woman out of the car. "When we were about 15 metres from the car, flames engulfed it and shortly after, the gas tank exploded," says Col Lanctis. He applied first aid to the victim until the ambulance arrived.

When the colonel arrived home that night, his wife, Marilyn, met him in the driveway. She knew at once that it had been more than a typical Friday drive home. "My hair was singed off my arms and face, my clothes were torn and burnt in places," recalls Col Lanctis. "It was not until I recounted the events, however, that the gravity of what happened began to sink in and I began to shake."

For weeks afterwards, Col Lanctis admits he had nightmares about burning cars and fighting to save more victims. "In reality, I was pulling my poor wife right out of bed," he adds with a smile — a smile that hides the obvious intensity of those dreams.

Col Lanctis has also saved lives on two other occasions — occasions when, once again, crowds stood around, unwilling or unsure of lending assistance.

In the mid-1960s at a beach near Montreal, he rescued a boy from drowning. In his urgency, he cut his foot severely on broken shells. The next incident was in the early 1980s in Ottawa. "Once again, while driving home, I came across an accident. This time, a fellow had driven into a telephone pole," says the dental officer. The gathering crowd thought the driver was dead. But deciding that he must do something, Col Lanctis



Col. Lanctis accepts the Ontario Provincial Police Commissioner's Citation for Bravery from OPP Deputy Commissioner Jim Szarka.

removed the victim from the car.

The driver was in very bad shape. "His pulse was weak and irregular — about 10 or 20 beats per minute — so I started to resuscitate him right away," says Col Lanctis. "After about 15 minutes, he came to and began thrashing about quite violently." The man lived.

Col Lanctis is modest about his life-saving actions over the years.

"A lot of people say that the military ethos is dead, that the concept of a military officer's duty to serve the public is somehow limited to the field of battle," he says. "But I disagree with that entirely. The military training we receive teaches us to persevere and stick with things — that society expects more from us."

How does Col Lanctis explain why he has gone to the aid of fellow humans so many times? He modestly volunteers, "I'm sure any military member would have done the same thing had he or she been in the same situations."

All of us would like to think he is right.

Perhaps if any of us is ever in a position to save someone's life, Col Lanctis' extraordinary efforts will serve as a shining example.

Col. Lanctis is a graduate of the University of Montreal's School of Dental Medicine (DDS in 1966).

He calls Montreal home, and has served in Comox, Edmonton, at military bases in Europe, then in Toronto and Ottawa. He is, in addition to being a dental officer, a trained paratrooper.

He is presently in charge of all dental components at military bases in Manitoba, Saskatchewan, Alberta, Northern Ontario and the Northwest Territories.

A highly motivated individual, Col. Lanctis says that at an accident or disaster, bystanders tend to be mesmerized . . . looking on but not assisting. He told this Journal that if he can't help or support, he feels he should move on and not succumb to voyeurism. Δ

Dr. Richard Ten Cate

Former Dean honored by two universities

Dr. Richard Ten Cate, former dean of the dental faculty at the University of Toronto, is perhaps the first person to receive two honorary degrees within two days.

On May 31 and June 2, Dr. Ten Cate was presented with honorary Doctor of Science degrees at the annual convocation ceremonies of McGill University and the University of Western Ontario, respectively.

Recognized around the world as a leading scientist in the field of dental histology, Dr. Ten Cate has lectured in Europe, Asia, Africa, Australia and North America. His contributions to dental literature are extensive. He is the author of three textbooks, 20 chapters in other textbooks, and more than 45 other publications.

Born in Britain, he originally planned a medical career but was persuaded at an

early stage that he should pursue the basic sciences and continue later in the dental profession because there was a need for individuals with a scientific background in dentistry. With a BSc and a PhD in anatomy, he was one of the first dental students in Britain to combine the two fields.

In 1968, the University of Toronto invited him to duplicate the educational experiences of Britain in Canada. Since that time, he has been a Professor, Chairman of the Division of Biological Sciences and Dean of the Faculty of Dentistry (1977-1989).

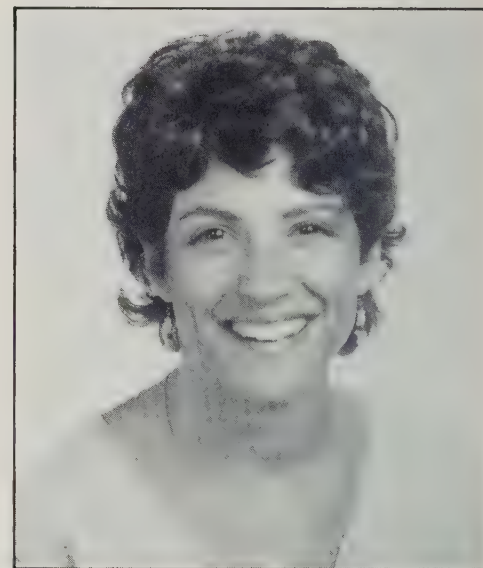
After a short sabbatical, Dr. Ten Cate assumes a new position as Vice-Provost of the Health Sciences Department at the University of Toronto. CDA congratulates Dr. Ten Cate on his well-earned honours. △



Dr. Richard Ten Cate, centre foreground, (left), receives the degree Doctor of Science, honoris causa at the Spring Convocation of McGill University, Montreal, from the Chancellor of that University, Jean de Grandpré.

Dr. Shelley Halpenny

Vancouver dentist victim of terrorist action in Israel



Dr. Shelley D. Halpenny. . . .

The untimely death of Dr. Shelley Dawn Halpenny in July saddened and shocked the entire Vancouver community.

Dr. Halpenny, who graduated from the University of Saskatchewan in 1977 with a BSc in laboratory technology and the University of British Columbia with a DDS in 1983, died on July 6 when a terrorist grabbed the steering wheel of a bus and sent the vehicle hurtling over a cliff in Israel. Fourteen passengers were killed, two of them Canadians.

She was in Israel to attend a dental convention and to watch her father participate in the Maccabean Games.

Born in Vancouver, July 25, 1956, she married Dr. Robert Halpenny, a Vancouver physician, in 1980.

She was a member of Alpha Omega and an active participant in several study clubs and continuing education courses at the University of British Columbia. Dr. Halpenny was an accomplished pianist, an enthusiastic athlete and an excellent seamstress. She loved to sail and was a member of the Royal Vancouver Yacht Club and a women's sailing group.

She is survived by her parents, Dr. and Mrs. M. (Bud) Wolochow, brother Peter and two sisters, Janice and Eve. △

Electronic Data Interchange

Over the past year, the Third Party Dental Plans Committee of the CDA has been exploring electronic data interchange (EDI) for dentistry. Under the proposed system, information that was previously sent by mail could now be sent via an electronic network from one office to another between most centres in Canada.

EDI offers many advantages to dentists, dental associations, dental plan carriers and purchasers, because of the greater efficiency in moving data electronically compared to the standard mailing of paper. With the efficiency of claims processing will come reduced administrative costs, bringing savings to dentists, patients and insurance carriers.

All of the provinces except Quebec have signed EDI participation agreements with CDA. Currently, the Third Party Committee is meeting with a group of insurance companies to develop a national system for the profession. Plans are also underway to arrange group purchase of computer equipment and software for dentists at a reduced price. If negotiations continue to go well, EDI could be up and running in 1990.

In the past few months, dentists have posed a number of questions about EDI and raised concerns about possible weaknesses with the system. Dr. Jean Gauthier outlined his concerns in "The Future is Here. . . Only After the Present" in the June issue of the CDA Journal (It's My Opinion, page 486). And in the June issue of Ontario Dentist (The Last Word, page 30), Dr. David Somer pointed out the potential for abuse under the new system. To address these concerns, here is an overview of the proposed EDI system and how it will work for you.

Advantages to Dentists

For dentists, the system brings faster processing of dental plans, since the information would only need to be handled once by the receptionist. It could be simultaneously entered in the office books and filed for transmission to the dental plan carrier.

By entering the patient's claim number, the dentist could instantly verify patient eligibility, check financial limits of the plan and determine the unused balance.



Dr. Bernard Dolansky

Predetermination information for all but those procedures requiring radiographs or dental consultant adjudication could be submitted electronically. The answer could be available on-line or within 24 hours, depending on the system.

The statement of payment from the dental plan could be sent electronically to the dental office as well.

The system could also include credit card draft capture so that the patient could pay for dental treatment using Visa or MasterCard.

Electronic messaging and mail can also be built into the system, enabling more effective communication between dentists and their professional associations.

When dental supply companies become automated, it will be possible to shop and order electronically.

Advantages to Patients

For the patient, EDI brings a more convenient method of payment and reimbursement for treatment. Once the amount of coverage is determined, that amount of money can be guaranteed to the dentist or the patient. When electronic banking is available, the funds can be transferred overnight. The patient will be able to pay any amount not covered by insurance through pre-authorized cheque or by credit card, which would also be part of the system.

Advantages to Dental Associations

The primary advantage to dental associations is availability of data on dentistry. Associations will be able to communicate with members easier and faster through electronic mail. Also, since the EDI network will collect all of the data on dental claims in a global fashion, organized dentistry will have access to more data. The network will be managed by organized dentistry and no unauthorized party would have access to this valuable information on the profession. This database could be used as part of dentists' fee guide research, for dental manpower assessment and for practice profiling in those provinces that wished it.

Advantages to Insurance Carriers

Insurance companies would have less paper work, saving on costly administration of claims. They could offer beneficiaries faster turnaround time and lower premiums as a result of economies in claim adjudication. Currently, it costs the insurance company an average of \$1.00 to \$1.50 to process each claim. Under EDI, the estimated cost of processing a claim would be 50 cents, since the data would not have to be entered again by the insurance company. We anticipate that the highly competitive dental insurance market will see these savings reflected in lower premiums. This could make dental insurance, or increased coverage for those who already have insurance, more accessible.

Requirements

Dentists would need a personal computer that could handle point-of-service transactions. Point-of-service terminals are in the same price range as personal computer work stations (\$1,500 - \$2,000) but they have the added capability to handle complex dental claims. With the addition of a software package, this system could also perform bookkeeping functions for the practice.

Some system of patient identification might be necessary, with a subscriber number on it. The card might have a

magnetic stripe (\$.30 per subscriber) or a plain plastic patient identification card could serve the purpose.

In an on-line reactive system, while the patient was still in the chair, the dentist could send the transaction by modem to the insurance company which would check eligibility, adjudicate the claim and notify the dentist of the results.

Adjudicators

At present, several companies have the potential for an on-line system which will allow them to participate in this network. Other insurance companies and third party providers who wish to remain competitive will have to develop similar on-line capability. The Third Party Committee is meeting with a group of insurance companies interested in joining EDI. The transaction costs (about 20 to 50 cents per patient) would be borne by the adjudicators.

Network Providers

The Network Providers being considered for EDI fall into two basic categories:

- 1) those with existing networks and transaction processing software for insurance claims (ie. drugs, eye care and dental). Examples include Shared Health Network of Toronto, and Health Net.
- 2) those that provide general networks which can be used for the transmission of dental claims. These include IBM, General Electric Information Services Co., Canada Systems Group, and Cooperators Data Services.

Network providers in the first category have developed transaction processing capabilities specifically to handle claims transactions. Shared Health has developed a framework which allows for "real-time" (immediate) adjudication of claims by the insurance company at the end of the network, and Health Net is in the process of developing a similar system. These networks are integrated with the banking networks and can provide electronic funds transfer and credit card draft capture/verification.

Providers in the second category, (i.e. IBM, GE, etc.) could form the basis for CDA and interested insurance companies to establish their own customized comprehensive offering for the dental profession. However, this would involve time and significant expenditure for:

- the development of transaction processing software for the network
- the creation of an infrastructure to manage the network

- the development of software for the dental office to process claims.

In order to meet both the concerns of dentistry and of the participating insurance companies, the CDA's Third Party Committee proposes to have a joint project involving a management committee, with equal representation from CDA/provincial associations and the insurance industry. While each company's data would flow through to the particular adjudicator, the aggregate database on all of the information transmitted by the system would be owned and managed by the dental profession.

It is also proposed that the insurance industry would provide the capital required to set up EDI. The reduction in claims administration costs should provide sufficient funds to accomplish this and pay the operating costs of the system, and, in addition, pay a net amount per claim over and above these costs to the CDA and its corporate bodies.

How it Works

Three different systems are being considered by the CDA's Third Party Committee. They vary in complexity and in capability.

Option 1: The CDA Mailbox

The mailbox system uses a network such as G.E. or IBM to transmit data from the dental office to the claims adjudicator. The dental office would use a personal computer to enter claims during the day, to be transmitted in batches at the end of the day to the central computer/clearing-

house. Responses would take 24-48 hours, depending on the capabilities of the adjudicator. This "electronic mailbox" would be managed by the owner of the network (a 50 per cent partnership between CDA and the insurance companies).

The clearinghouse will sort the claims and other transactions (e.g. predeterminations) and put them in the mailboxes of the adjudicators.

The insurance company will pick up those claims and adjudicate them, then return the payment to the patient or dentist by cheque or electronic bank transfer.

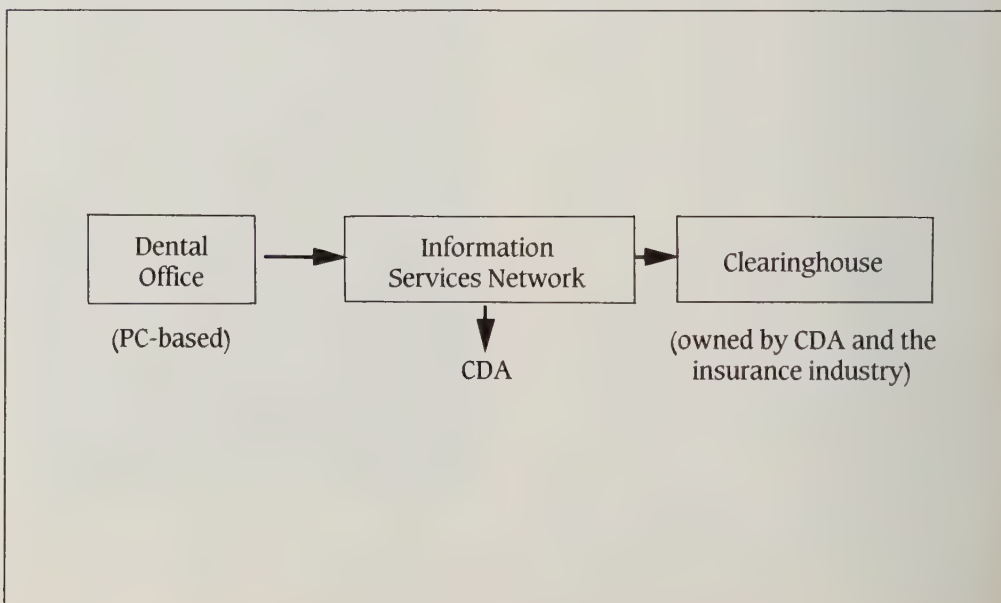
Other transactions, such as predeterminations, would follow the same routing from the dental office to the mailbox, be picked up by the insurance company, acted upon, and sent back to the mailbox where they would be returned to the dental office.

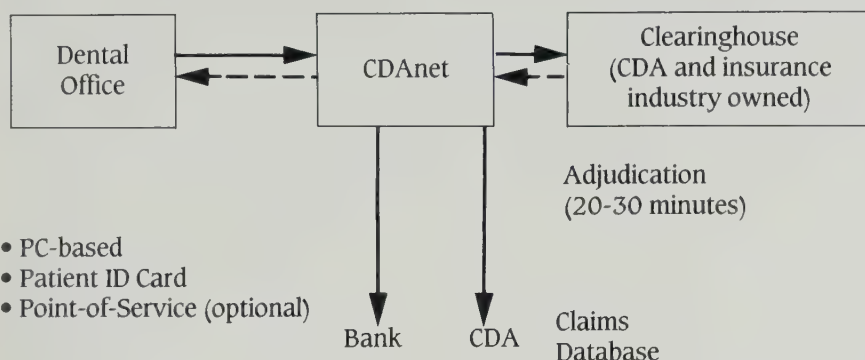
This system could also be used for electronic mail between dental associations and their members, and perhaps even between individual dentists.

Option Two: CDAnet

CDA net is similar to option 1, but has greater capabilities. As opposed to sending the information at the end of the day in batches, this system handles individual claims on-line in "real time".

The personal computer in the dental office will communicate via modem with the central clearinghouse/mailbox on a claim-by-claim basis. From the clearinghouse, the claim is sent to the adjudicator who will determine eligibility, coverage,





Did you know?

You can rocket your way into Heaven. A recent report in the Winnipeg Free Press states that a "no-frills" cremation averages about \$560 in Canada compared with \$3,000 for a top-of-the-line burial with all the trimmings.

However, if money isn't a factor, the U.S. Department of Transportation has approved plans for a Florida firm to launch a rocket with 10,000 urns of ashes into space.

The price tag to send one urn heavenward is estimated at \$3,900 US.

(Please don't write us for the Florida firm's address!)

deductibles, co-payments, etc., and send it back via the same routing to the PC in the dental office. In as little as 20-30 minutes, the dentist can have the information needed to proceed with the patient.

Once the amount of coverage is determined, the amount of money can be guaranteed to the dentist or the patient. With electronic banking, the funds can be transferred overnight. This system has the added feature of handling credit card transactions.

Option 3: Othernet

The third option is to use the existing networks such as Healthnet and Shared Health Network. These would offer the same capabilities as option 2, and save on the development costs of a new system. CDA could form a contract with one of these companies to service EDI for a set fee.

Conclusion

One of the principal goals of the CDA's Third Party Committee is to create an environment where there would be only one EDI network for the transmission of dental claims. The Committee strongly believes that it is in our best professional interest to have control over this important database on dentistry.

CDA therefore strongly urges all dentists in Canada to be very cautious about participating in any EDI network that is not sanctioned by their national or provincial organization. △

CDA Retirement Savings Plan

Unit values: (Funds are valued weekly)

Fund	Unit values as at	
	July 31, 1989	June 30, 1989
Bond & Mortgage Fund	69.12343	68.14243
Common Stock Fund	17.26959	16.35879
Money Market Fund	45.55787	45.06957
Balanced Fund	29.85077	28.94391

G.I.C. Fund

Term

	*Interest rates as at	
	July 31, 1989	June 30, 1989
1 yr	10.85%	11.10%
2 yr	10.60%	10.85%
3 yr	10.40%	10.60%
4 yr	10.10%	10.35%
5 yr	10.10%	10.35%

(*rates subject to change without notice.)

Total Assets (Market value) of the Plan as of:

	July 31, 1989	June 30, 1989
	\$115,817,688	\$112,922,408

For further information:

Write:
 **CDSPI**
 Retirement Services Dept.
 Suite 600
 2 Lansing Square
 Willowdale, Ontario
 M2J 4Z3

or phone, toll-free:
 Western and Atlantic Canada
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Dental Practice Busyness: Results of a Recent Survey

(This article marks the start of a new focus for the Dental Awareness Program Update. The DAP Advisor will offer dentists interesting and helpful ideas for increasing practice busyness, educating patients, and raising awareness about preventive dental care.)

Is your practice as busy as you would like it to be? According to a recent CDA survey, fully half of dentists are not satisfied with the level of "busyness" in their practices. And those dentists who aren't busy enough would like to be up to one third busier than they are right now.

These are two of the important findings of a questionnaire sent to every CDA member with the May issue of *Communiqué*. Over a thousand responses were received. See how your practice compares with these findings:

The respondents to the questionnaire live in all provinces, with concentrations in the more-populated areas of Ontario, B.C., and Alberta. They have been in practice for from two to 35+ years, with the majority reporting 20 years or less in practice. Practices of all sizes were represented. Nine percent of responses were from francophones. Respondents work in all types of practices: the majority work in single-dentist offices, but a significant number work in offices with two or more dentists.

Fully 49 per cent responded "no" to the question "Is your practice as busy as you would like it to be?". Of the dentists who would like to be busier, the vast majority (85 per cent) want up to 30 per cent more busyness.

Understandably, satisfaction with the level of busyness increases with the number of years in practice. Only 29 per cent of those in practice for five years or less are satisfied, compared with over 50 per cent of those in practice for 16 years or more.

Dentists in certain regions are more satisfied with their level of busyness than others. The highest level of satisfaction is in the Atlantic provinces (62 per cent), followed by Ontario (54 per cent), the Prairies (47 per cent), Québec (45 per cent), and B.C. (41 per cent).

There seems to be no relationship

between satisfaction with level of busyness and type of practice, although dentists who work in hospitals seem to be much busier than average. Likewise, there's no correlation between level of satisfaction with busyness and the number of dentists in the practice.

About one third (34 per cent) of dentists have computers, but there is no relationship between having a computer and satisfaction with level of busyness. It seems that while computers help dentists organize their existing patient load, they don't necessarily result in greater patient volume.

This survey has yielded some significant information, particularly as related to dentists' perceptions of the busyness of their practices. But perceptions are frequently an insufficient basis for individual action. It's equally important to look at the facts. In order to answer the question "How do I make my practice busier?", it's useful to answer the questions "How busy is busy enough?" and "How busy am I really?".

How Busy is Busy Enough?

One of every two dentists wants to be busier. But the meaning of "busier" may vary from dentist to dentist. Depending on the practice, busier can mean:

- fewer lost patients annually
- fewer appointment cancellations
- more new patient referrals
- more recall appointments
- more active patients

or some other measure. Once you've determined the *type* of "busier" you want, it's also useful to think about the *quantity* of that kind of busyness.

In other words, how many fewer lost patients annually, that could be prevented? How many more recall appointments? These two pieces of information: the type and the amount of increased busyness, give you a rough idea of where you want your practice to go. Answering the question "How busy am I really?" helps you figure out where you're coming from.

How Busy am I Really?

A dental practice is not static. It changes from day to day, month to month, year to year. Some of these changes are cyclical,

some are the result of problems, and others are almost imperceptible. A "busyness analysis" helps you get at the real facts.

To do this analysis, you need to look at your appointment books for the past three years.

1. Taking one three-month period at a time, note daily totals of:
 - chair time available
 - actual chair time used
 - cancellations that were left unfilled.
2. Subtract the amount of chair time used from the amount available to obtain the level of utilization of your services.
3. Calculate time lost due to cancellations as a percent of total time available.
4. Do this analysis for your hygienist(s) appointments as well.

Once the "busyness analysis" is complete, start looking for trends.

- Are there changes in the utilization level? What is the trend? Is it consistent with the level of services you have provided over this time?
- Is there a seasonal pattern to your utilization level? Summers, around Christmas, and early in the new year are usually the quiet times.
- Are there significant changes in the amount of chair time available? If you have expanded or contracted your services, you should see that change reflected here.
- Is there a pattern to the percentage of cancelled/not filled appointments? What would you consider to be a tolerable level for your practice?

The final and most important question is "Are you happy with what you see?" The trends you see in your practice indicate not just where you've been but where you're going if you continue to run your practice the same way. All things being equal, if you're getting busier, that will probably continue. A decline would be likely to continue, too. Ups and downs are the sign of instability somewhere that may well continue if not resolved.

In the coming months, the DAP Advisor will give you hints and ideas on increasing your level of busyness, why some dental offices are not as busy as they could be and making your practice more successful. Δ



Le CDSPI - votre partenaire pour l'avenir

A l'approche de la fin de notre 30^e année, nous orientons notre regard vers l'avenir. Nul ne sait ce que nous réservent les 30 années qui viennent. Deux choses sont sûres toutefois : il y aura des changements dans la profession dentaire et dans la manière dont elle opère, et le CDSPI sera là avec les services dont vous aurez besoin pour faire face à ces changements.

Le CDSPI a pour mission de vous donner les services d'assurance, de placement et d'information dont vous avez besoin, aujourd'hui comme demain.

VOUS POUVEZ COMPTER SUR NOUS



Pour de plus amples renseignements contacter le CDSPI, sans frais, et un agent d'information se fera un plaisir de vous aider.

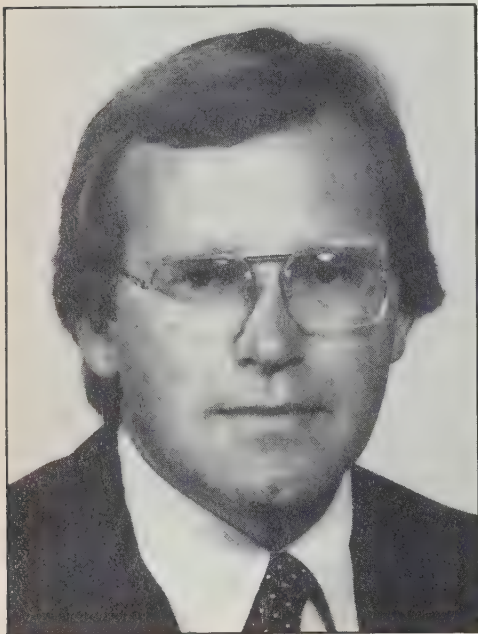
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497.71.17 Toronto et environs

Dr. Gary M. Foshay of Halifax was recently installed as President of the Canadian Academy of Periodontology at the annual meeting in Toronto.

The Past President is Dr. Edward J. Hannigan, also of Halifax; the President-Elect is Dr. Malcolm Miller of Calgary, and the Secretary is Dr. Dan Morrow, of London, Ontario. Dr. Robert Fortier, of Sherbrooke, Quebec, is the Treasurer.



Dr. Gary M. Foshay

A graduate of Mount Allison University, Sackville, New Brunswick (BSc, Honors, 1974) and Dalhousie (DDS, 1978), he practised in Lunenburg, Nova Scotia, until 1980. He then studied at the University of Pennsylvania, where he received his Certificate in Periodontics, in 1982.

Dr. Foshay currently conducts a private practice in periodontics in Halifax and is Assistant Professor, Part-time Faculty of Dentistry, at Dalhousie University. He held the position of Clinical Director, Post-Doctoral Program in Periodontics, from 1983 to 1988.

He is a past-president of the Atlantic Society of Periodontology and has lectured in Canada, the United States and Europe. Δ

Norman Levine, BA, DDS, DipPaedo, MScD, FRCD(c), a prominent member of the Faculty of Dentistry at the

University of Toronto, is now serving as Acting Dean of the Faculty.

Dr. Levine's appointment became effective July 1 last, following the expiration of Dr. A.R. Ten Cate's term as Dean.



Dr. Norman Levine

He was appointed to the University of Toronto's faculty in 1962, and became Professor in Paedodontics in 1978, and subsequently, Head of Paedodontics.

Dr. Levine's special interest area is dentistry for the mentally retarded. Δ

Dr. A.W.S. (Art) Wood who since 1970 has been the Canadian Dental Association's spokesman as a member of the Canadian Standards Association's Technical Committee for Evaluation of Protective Equipment for Athletes, has been named President of the Academy of Sports Dentistry.

Dr. Cosmo Castaldi, of Farmington, Connecticut, a native of Sudbury, Ontario, is the new Vice-President of the Academy.

The Academy of Sports Dentistry, an international body dedicated to the development of gear to prevent oral and dental injuries to athletes is "similar to the Academy of Sports Medicine," Dr. Wood explained. Dr. Wood is a Charter Member of the Academy, established following a Sports Dentistry Symposium at the University of Texas in 1983.

Dr. Wood is internationally known as the "father of the mouthguard" used in contact sports such as football and hockey. He has also provided much input into the development of efficient sports helmets and face masks for goalies in hockey.

He was the recipient of the CDA's Distinguished Service Award in 1985.

Also a respected member of his specialty field, Dr. Wood has served as President of the Canadian Society of Dentistry for Children and the Canadian Academy of Paedodontics. Δ



Dr. A.W.S. Wood

The dental profession in France is preparing to celebrate a significant anniversary in 1992.

The French Dental Association will be marking the centennial of dentistry as a profession.

The celebration is scheduled for the Sorbonne in Paris on November 30, 1992. The occasion will mark the 100th anniversary of the law that gave dentistry legal status as a profession. The same piece of French legislation also legalized the designation "dental surgeon" and established the requirements for the study of dentistry. Δ

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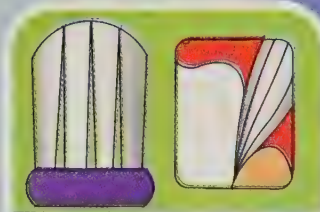
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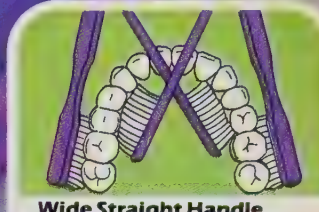
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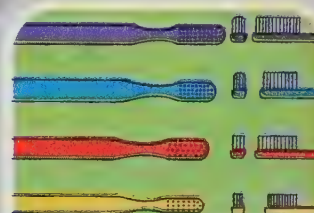
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Premédication

La rémédication

1. Baltch, A.L. and others. "Bacteremia in patients undergoing oral procedures." *Archives of Internal Medicine*. May 1988, v. 148, no. 5, pp. 1084-8.
2. Barnett, M.L. and others. "The prevalence of mitral valve prolapse in patients with Down's syndrome: implications for dental management." *Oral Surgery Oral Medicine Oral Pathology*. Oct. 1988, v. 66, no. 4, pp. 445-7.
3. del Piano M. and others. "Study on tissue concentrations of antibiotics: bacampicillin in gingiva and maxillary bones." *Chemotherapy*. 1988, v. 34, no. 1, pp. 13-7.
4. Eskinazi, D. and Rathbun, W. "Is systematic antimicrobial prophylaxis justified in dental patients with prosthetic joints?" *Oral Surgery Oral Medicine Oral Pathology*. Oct. 1988, v. 66, no. 4, pp. 430-1.
5. Etienne, J. "Corynebacterium group JK endocarditis after dental extraction under antibiotic cover." *Journal of Infection*. Sept. 1988, v. 17, no. 2, pp. 188-9.
6. Hardie, J. "Report on prosthetic joints, antibiotic prophylaxis and dental treatment." *Canadian Dental Association Journal*. May 1988, v. 54, no. 5, pp. 355-7.
7. Helpin, M.L. and Duncan, W.K. "Clean vs sterile technique for pediatric

- dental patients in the operating room." *ASDC Journal of Dentistry for Children*. Nov.-Dec. 1988, v. 55, no. 6, pp. 449-51.
8. Jacobson, J.J. "Chemoprophylaxis of dental patients with prosthetic joints: a simulation model." *Journal of Dental Education*. Nov. 1988, v. 52, no. 11, pp. 599-604.
9. Kim, H.W. "The prevention and treatment of postoperative pain in dentistry." *Odonto-Stomatologie Tropicale*. Sept.-Dec. v. 10, no. 3-4, pp. 161-6.
10. Little, J.W. "Is there a need for antibiotic prophylaxis in dental patients with prosthetic joints?" *Oral Surgery Oral Medicine Oral Pathology*. Oct. 1988, v. 66, no. 4, pp. 430.
11. Luyk, N.H. "The effectiveness of flurazepam as night sedation prior to the removal of third molars." *International Journal of Oral Maxillofacial Surgery*. Dec. 1988, v. 17, no. 6, pp. 347-51.
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13. Nelson, C.L. and Van Blaricum, C.S. "Physician and dentist compliance with American Heart Association guidelines for prevention of bacterial endocarditis." *Journal of the American Dental Association*. Feb. 1989, v. 118, no. 2, pp. 169-73.
14. "Premedication in dentistry. Fédération Dentaire Internationale. Technical Report no. 32." *International Dental Journal*. Mar. 1989, v. 39, no. 1, pp. 55-61.

15. Sadowsky, D. and Kunzel, C. "Recommendations for prevention of bacterial endocarditis: compliance by dental general practitioners." *Circulation*. Jun. 1988, 1361-8.
16. Shay, K. and Lloyd, P.M. "Dental schools' practices of prophylactic antibiotic coverage for patients with prosthetic joints." *Journal of Dental Education*. Oct. 1988, v. 52, no. 10, pp. 564-7.
17. Williford, S.K. and others. "The safety of dental extractions in patients with hematologic malignancies." *Journal of Clinical Oncology*. Jun. 1989, v. 7, no. 6, pp. 798-802.

One copy of the above package of articles is available for \$5.00 to all CDA members and for \$10.00 to non-members. (Ontario residents, please include 8% sales tax.)

LIBRARY SERVICES

As a convenience to all CDA members in the various time zones in Canada, it is now possible to call the CDA Library, between 4:30 pm and 8:30 am Ottawa time, in addition to during regular library hours (8:30-4:30 EST)

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COMMUNITY DENTAL HEALTH

A.W. Jong, ed.

*C.V. Mosby, Company 1988, 2nd ed.
290 pages, 37 B&W illustrations.*

This contributed book provides a concise introduction to selected topics in the area of community dentistry in the United States. Canadian readers may not be interested in descriptions of governmental or legislative details that are only applicable to the dental care system in the United States. Nevertheless, they can benefit from the general introduction (at least from an American perspective) to the area.

The *Preface* succinctly summarizes the changing social, demographic, professional, and economic environment in which dental professionals practise today. The reader is reminded that the US health care system is different from that of other developed countries, such as the United Kingdom, New Zealand, and Sweden (and Canada), where the access to health care has been "guaranteed" by government. The editor concludes that a new social ethic of responsibility for all has been firmly established in his country. In addition, he envisions the role of dentist in society to have changed from an isolated purveyor of rehabilitative services to an integrated member of a health team concerned with the prevention and early diagnostic services, not only to his/her patients, but for the community as a whole.

The book is divided into six sections. In section one, which includes three chapters, the role of the providers of dental services in community dental health is described. Chapter one, defines dental public health and describes federal and state involvement. Except for comparative purposes, this chapter may not be useful to Canadian readers. Chapter two describes the changing demographic distribution in the United States, and includes a brief discussion of manpower, methods of reimbursement, dental insurance, infection control, and malpractice. Discussion of these issues was clear but lacks depth. Chapter three describes the development of the roles of dental assistants and dental hygienists and those factors which will influence future directions.

Section two discusses the social aspects of dental care. The first chapter in the section describes the reasons for utilization of dental health services, dentistry as

a profession, and the politics of dental care. This chapter covers very narrowly the social aspects of dentistry and does not deal with the topics of social costs of dental disease, impact of oral health on the quality of life, and the importance of dental health to society in terms of social and economic costs. Except for one reference, the papers cited were all published prior to 1980.

A discussion of geriatric dental health is presented in chapter five. The author of this chapter reiterates the description presented in a previous chapter of the expected increase in number of the elderly in the society, and discusses the multiple facets of geriatric dental care. An interesting chapter to read for those looking for an introduction to this area. In the last chapter of this section, the financing of dental care in the United States is described. The "market forces" (a term which implies that dental care is a market commodity!) both from the demand and supply sides are discussed. The chapter also includes a description of fee-for-service financing and capitation.

Section three is devoted to dental disease and prevention. The chapter on epidemiology provides definitions and an introduction to the topic. Description of dental indices, however, includes obsolete indices and does not discuss new indices such as the CPITN, DAI, and the oral health index. The assertion that subjectivity of diagnosis can be "compensated" for by using a single examiner or a limited number of examiners that are "calibrated" is not supported by scientific data. If an index depends on subjective criteria, the use of a single examiner or even a limited number of examiners may not reduce subjectivity and improve validity. A good overview of preventive dentistry is presented in Chapter eight.

Section four covers dental health education of patients and communities, a description of dental education programs in the United States, and planning and evaluation of community programs. The topics, especially the planning and evaluation of community programs, are well described in a logical and easy to follow format.

Section five covers biostatistics, program evaluation, and research in community health. The chapters differ in depth and too many topics are condensed in this section.

Section six covers issues that are more related to practice management than community dental health. Team manage-

ment, theories of management, communication, problem solving and conflict utilization are covered in one chapter and the final chapter discusses the very important topic of ethical issues in dentistry. Unfortunately, this last chapter does not discuss some of the pertinent issues facing dentistry in the 1980s, such as refusal of treatment of AIDS and ARC patients. Also, not discussed are the ethics of community health versus the "market" concept of dentistry.

The book covers a large number of topics and is organized as a course textbook in "community dentistry" for American dental students. While some chapters of this book can be recommended for the readers of the Journal, the chapters presenting information on the United States' dental health care system may not be of interest to Canadian readers. Overall, a useful introductory book to the areas covered in community dentistry courses in dental schools.

Reviewed by:

*Amid I. Ismail, BDS, MPH, DrPh
Associate Professor
Division of Community Dentistry
Faculty of Dentistry
Dalhousie University*

PARTIAL DENTURE DESIGN: A LINGUAL LOCKING APPROACH

by Robert A. Katsev

*1987, Ishiyaku EuroAmerica, Inc., St. Louis
124 pages with photographs, \$30.00 US*

This book consists of 126 pages including 155 illustrations either in the form of photographs or pen sketches and there is a bibliography of 25 titles.

While this book may be of academic interest to prosthodontists, it is not recommended for dental students or general practitioners for the following reasons.

- 1) The photographs are generally of very poor quality and often useless in their purpose e.g.
 - 1) p. 42, 3-10 A-C (The mind boggles)
 - 2) p. 40, 3-9D
 - 3) p. 38, 3-8C (useless)
 - 4) p. 80, 6-5A-C (atrocious) and finally
 - 5) p. 73, 6-2B. The caption for this illustration states "Example of hiding a clasp on maxillary partial and of placing mandibular clasps at gingiva". It would appear that *all* the clasps

are hidden. It's a great pity that the photo itself is not.

- 2) Photographic captions are unusual! e.g. Fig. 3-13A-C "Arrows show vertical is permanently stabilized AND ALL T.M.J. SYMPTOMS DISAPPEAR." (Magical arrows!)
- 3) The text is inadequate e.g. from Chapter 5, in the first sentence "Start adjusting . . . while it is still a cast-kin? The content is highly opinionated.
- 4) The bibliography is mixed up (i.e. all the references are numbered except Chapter 5 where the first is numbered and the remainder are lettered a.b.c. etc.) So what does #3 in the text mean, "b" which is the third, or "c" which is the third letter . . . or is it "none of the above"? Not all are evident in the text.
- 5) Spelling errors not eliminated (e.g. Molybdenum . . .) this should be carefully edited.
- 6) The title of this manual is misleading. There is no locking on the lingual aspect at all of any single case. In fact the author expressly describes how to remove any undercuts that may have been formed on the lingual aspect of the abutment teeth. Lingually placed major connectors might be more accurate.

This book was reviewed by:
Dr. Trevor J. Harrop
Professor, Dept. of Clinical Dental Sciences
Faculty of Dentistry
The University of British Columbia

FLUORIDE IN DENTISTRY

edited by Jan Ekstrand,
Ole Fejerskov,
Leon M. Silverstone

1988, Munksgaard, Copenhagen
294 pages, B&W illustrations

Fluorides play a central role in the current dramatic decline in caries prevalence in the industrially developed countries. This remarkable health story coupled with a comprehensive review of the biological effects of fluoride is the subject of this new text.

The text begins with a discussion of the distribution of fluorides in the environment, the intake by humans with emphasis on the effects of fluoride on the hard tissues; fluoride in saliva and dental plaque and its effect on oral microorganisms. The physiological, pharmacological and toxicological aspects of fluoride metabolism are thoroughly covered. The

last three chapters focus on the clinical application and rationale of different fluoride regimens.

A unifying theme of this multi-authored text is that fluorides act by interfering with the development of caries lesions so that the progression rate is reduced and indeed reversed. The unique chemical properties of fluoride that catalyze the remineralization of carious lesions and the formation of the more stable calcium and phosphate apatitic compounds leads the author to conclude that "the use of fluoride can no longer be thought of as a preventive measure but as an act of treatment of on-going lesions".

The authors convincingly argue that topical fluoride regimens are more effective than the use of systemic fluoride. However, the evidence that systemic fluorides have an effect on the morphology of teeth, thus significantly reducing the susceptibility of the occlusal surfaces to the carious process, is ignored. If as the authors state "systemic fluoride effect is important for the prevention of fissure caries" and "smooth surfaces protection is obtained posteruptively" (p.256) then the most effective regimen remains a combination of a systemic and topical treatment. This approach, which is currently recommended in many institutions, is unfortunately, not highlighted in the text. Nor do the authors adequately address the important topic of the future of water fluoridation. The reader is left in an ambivalent state.

In a multi-authored text, involving 19 contributors, a surprisingly good continuity has been maintained throughout. The book contains several, albeit insignificant, editorial errors (abtain, on page 238: water fluoridation as a single word on page 243 and an index that does not always relate the index subject with the text page (systemically administered fluoride is not on page 62 as noted on the index). Significant to the student in dentistry and the practitioner is the omission of the appropriate use of fluoride supplements in selected cases. A simple table of appropriate dosages as determined by the weight of a child and the existing levels of fluoride in the community water supplies would have provided students and practitioners with a knowledge base to use this regimen safely and judiciously.

Notwithstanding the deficiencies noted, this book remains the most readable and comprehensive work on fluoride in dentistry currently available. The authors have admirably met the aim of the text book which is "to bring together the

most recent research . . . to enable the dental student and the dental practitioner to understand how fluoride may be most appropriately used". I recommend this text to students of dentistry and especially to those who wish to gain a broader understanding of the role of fluoride in dental health and in biology.

This book was reviewed by:
Gordon Nikiforuk
Professor
Department of Preventive Dentistry
University of Toronto

THE HILLENBRAND ERA: ORGANIZED DENTISTRY'S GLANZPERIODE

by C.O. Dummett and
L.D. Dummett

1986, American College of Dentists
Foundation, 204 pages, \$20.00

The Hillenbrand Era, published by the American College of Dentists, recounts the growth and development of dentistry in America from 1930 until the 1970s. In particular, the book emphasizes the contribution of Dr. Harold Hillenbrand who served as Executive Director and General Secretary of the American Dental Association (ADA), from 1946 to 1969. This period of time has been quipped "Organized Dentistry's Glanzperiode."

Prior to reading this book I had little insight into the history of "organized" dentistry's critical development during this important period of time, in particular Dr. Hillenbrand's contribution. Although this biography recounts events that occurred mainly in the United States, their importance in relation to dentistry's development worldwide is apparent.

The story is divided into 12 episodes. Episode one recounts the "Early Years" when organized dentistry was in its infancy. The book then moves through several episodes reliving milestones in the growth of the ADA from a corporate standpoint. The final episodes discuss the importance of research in dentistry's evolution as well as highlighting Dr. Hillenbrand's contribution to dental awareness and development over a 40 year span.

This book would be entertaining reading for anyone interested in the evolution of dentistry as an important health service in general, as well as those interested in how an organization evolves and develops, in particular a professional group such as the ADA.

This book was reviewed by:
Dr. Roland G. DeBrouwere
Winnipeg, Manitoba.

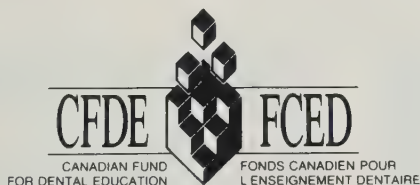
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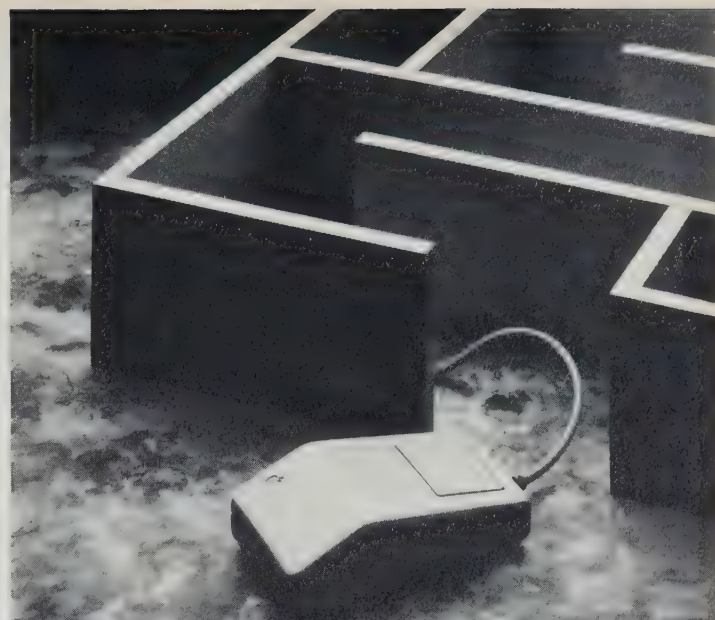


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'Nothing new or original' in scientific article

We have read with interest the article entitled "The unerupted or impacted third molar — a critical appraisal of its pathological potential" in the March 1989 issue of the Canadian Dental Association Journal. (Vol. 55 No. 3). We were disappointed to find nothing new or original in the article.

If the authors of this article are truly interested in prospective studies on the subject — why do they not undertake one? They are in university departments where patients can be screened and followed. Even a preliminary report of sound, original research would have made better reading than the complex and biased rehashing of the literature which has, in our view, missed the point.

Dr. Gerald A. Boyko
Dr. Robin D. Listrom
Dr. Peter E. Hodgson
Oral and Maxillofacial Surgeons

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Editor's Note: The above are the opening and closing paragraphs of a three page letter. Few articles in The Journal have resulted in more response from readers. The Journal is sorry space denies printing all letters (about 50:50 pro and con!).

ERRATUM

Captions reversed

The concern of every author with a number of illustrations in his article, and the bane of every editor, descended on the Journal in July.

In the scientific paper "Surface quality of gypsums when poured against alginate", by Dr. Walter R. Teteruck, *et al* (JCDA Vol. 55 No. 7 pgs 545-549) the captions of Figures 3 and 4 on Page 548 became transposed during the printing process.

Our apologies to the authors for this mishap.

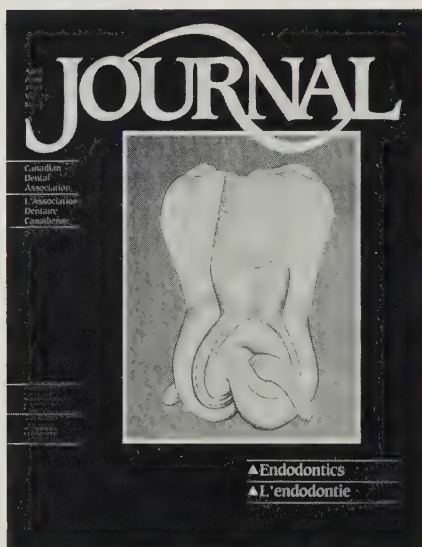
Table information transposed

Please note that unfortunately, the curriculum for the Dental Technology program at George Brown College (Table III, Part 4) was transported with the curriculum at Collège E. Montpetit (Table III, Part 3) on pages 377 and 378 in my article "Dental Technology Education in Canada," JCDA Vol. 55 (5).

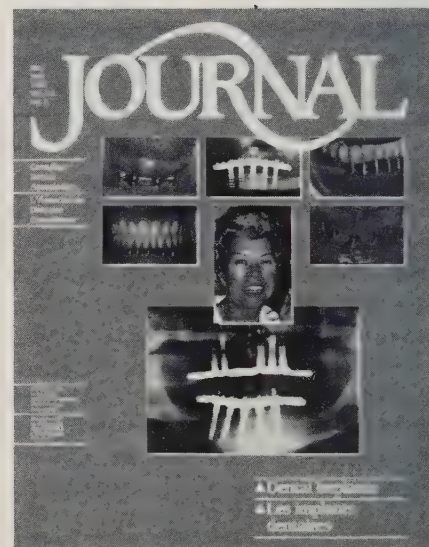
I would appreciate if mention of this necessary correction could be entered in the CDA Journal.

Dr. O. Sykora,
Division of Removable Prosthodontics,
Faculty of Dentistry, Dalhousie University,
Halifax, N.S.

CORRECTIONS



April cover



May cover

The Journal has erred in acknowledgements in two recent cover illustrations.

For the April cover, credit was inadvertently given to Dr. Bernard Dolansky of Ottawa. In fact, the concept and design of that impossible root configuration was from Dr. John McSpadden, an Endodontist from Chattanooga, Tennessee.

Credit for the pantographic radiograph on the May cover (the bottom black and white radiograph in the collage) was omitted. The Journal thanks Dr. Robert Hillis, a general practitioner and Dr. R. Harper an Oral and Maxillofacial Surgeon, both of Hamilton, Ont., for that illustration.



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WE'RE NOT THE FIRST TO HAVE FACED A WAVE OF PROFESSIONAL SCEPTICISM.

"Foolish and philosophically absurd," his outraged detractors cried. Some four hundred years ago, Galileo was hauled over the coals and charged with heresy for challenging the fashionable ideas of the time. His crime was in promoting the ridiculous theory that the earth moved while the sun remained stationary. ☞ Flying in the face of conventional wisdom requires a resoluteness of purpose and a pretty thick skin. And nobody knows that better than the makers of Listerine. ☞ Listerine continues to encounter its fair share of raised eyebrows among the traditionalists of the dental community. After all, there is still resistance to the notion that an oral rinse can play a significant role in supragingival plaque and gingivitis reduction. ☞ But if there are those among you who are still taking a cautious wait-and-see attitude, perhaps you should know that the American Dental Association doesn't share your scepticism. ☞ In fact, Listerine is the only over-the-counter rinse to have satisfied the ADA guidelines and to have received its Council on Dental Therapeutics' seal of acceptance. ☞ Clinical studies conclusively show that as an adjunct to your professional care, and your patients' daily oral hygiene, Listerine will further reduce plaque by as much as 34%^{1,2,3,4}. ☞ The scientific explanation is a simple one. Because Listerine is a broad spectrum bactericidal rinse: it destroys the major oral microorganisms found in dental plaque. ☞ There are no substitutes for brushing, flossing and regular dental visits. However, Listerine can offer your patients who need extra help an easy and effective way to further reduce plaque and gingivitis. ☞ Now, do we still hear the purists tut-tutting?

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PLAQUE AND GINGIVITIS.



A FEW CLINICAL FACTS ON LISTERINE FOR DIE-HARD SCEPTICS.



isterine is the only non-Rx antimicrobial rinse accepted by the ADA to help control supragingival plaque and gingivitis, following the ADA Guidelines (Council on Dental Therapeutics):

J.A.D.A. 112:528, 1986.

1. Studies were randomized, double-blind, parallel group design.
2. Study populations were representative of patients who use the product.
3. Both sexes participated.
4. Frequency and duration of product use were representative of actual label directions.
5. Product was compared to placebo control.
6. Studies were at least six months in duration.
7. Product was tested in at least two studies by different independent investigators.
8. The same examiner was used with the same subjects for each index and procedure throughout each study.
9. Supragingival plaque was scored by an acceptable plaque index (the Turesky modification of the Quigley-Hein Index).
10. Studies used an acceptable gingival index which met the guideline criteria (Modified Gingival Index).
11. Evaluations were conducted at baseline, three months, and six months.
12. Extrinsic tooth stain and soft tissue condition were evaluated at baseline, three months and at

end of study.

13. Effects on supragingival plaque microbial composition were measured in two separate six-month microbiological studies by two different, independent investigators.

In conjunction with normal oral hygiene and regular professional care Listerine:

A. Helps prevent supragingival plaque and gingivitis.

DePaola L.G., et al. "Chemotherapeutic inhibition of supragingival dental plaque and gingivitis development". J. DENT. RES. 16:311-315, 1989.

In this six-month, double-blind study, twice-daily use of Listerine Antiseptic with regular oral hygiene following professional prophylaxis inhibited the development of both supragingival plaque and gingivitis by 34% compared to the hydroalcoholic control.

	Listerine	Control
Plaque Index	1.15	1.75
Gingival Index	0.92	1.39

B. Reduces existing supragingival plaque and gingivitis.

Lamster J.B., et al. "The effect of Listerine Antiseptic on reduction of existing plaque and gingivitis". CLIN. PREV. DENT. 5:12-16, 1983.

This six-month, double-blind study demonstrated the efficacy of twice-daily use of Listerine in reducing plaque and gingivitis. Scores measured a 20.8% reduction in supragingival plaque and

27.7% reduction in gingivitis in the Listerine group - a significant improvement over normal oral hygiene alone for the Listerine group versus the vehicle control.

	Listerine	Control
Plaque Index	1.93	2.44
Gingival Index	1.20	1.66

Listerine destroys major oral presumptive pathogens within 30 seconds.

Minah G., et al, "Effect of six month use of an antiseptic mouthrinse on supragingival dental plaque microflora". J. CLIN. PERJO, 16:347-352, 1989.

Plaque Microorganisms Susceptible to Listerine Antiseptic	
Gram-Positive Facultative Cocci	Streptococcus sanguis
	Streptococcus mutans
	Streptococcus salivarius
Gram-Positive Facultative Rods	Lactobacillus acidophilus
Gram-Positive Anaerobic Rods	Actinomyces viscosus
Gram-Negative Anaerobic Rods	Bacteroides intermedius
	Fusobacterium nucleatum
	Leptotrichia buccalis
Yeasts	Candida albicans
*in vitro testing	

With regular, long term usage Listerine:

- A
Does not cause extrinsic tooth stain.
- B
Does not promote calculus formation.
- C
Does not alter taste perception.
- D
Does not alter the balance of normal oral flora.

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*Caution: Do not give to children under 6. Contains: Alcohol 21.90% w/v, Eucalyptol 0.91% w/v, Thymol 0.063% w/v, Menthol 0.042% w/v. "Listerine has been shown to help prevent and reduce supragingival plaque accumulation and gingivitis when used in a conscientiously applied program of oral hygiene and regular professional care. Its effect on periodontitis has not been determined." COUNCIL ON DENTAL THERAPEUTICS AMERICAN DENTAL ASSOCIATION. For more information on Listerine clinical studies or prescribing details call 1-800-668-1503.

ACCEPTED BY THE ADA TO HELP PREVENT AND REDUCE SUPRAGINGIVAL PLAQUE AND GINGIVITIS.

'Values and Ethics' — A Perspective on Long Term Prosperity



Claudia Anderson, RDH

In developing the analogy of the "old papa" and the "new papa" in New Visions of Prosperity in July JCDA, I was addressing a values issue which has profound ethical consequences. In analyzing the two extremes of this values conflict, we identify the "old papa" as the caring and traditional dentist up against the "new papa", the slick businessman and professional. The reality is however, that neither example is true to form. Because of changing work environments, we are part of each values cluster, often depending on the environment, and the time of our lives. As I see it, values are personal standards, beliefs and principles upon which we make life choices, be they economical, clinical, professional, social, moral or aesthetic. Ethics provide the *guidepost* or measurement of *what we value* — what we believe to be right or wrong in a specific situation. Together values and ethics forge a "**position on life**" which is fundamental to the position we will take in terms of becoming prosperous and maintaining financial success in dentistry.

"Being prosperous is only important if we can repeat the process"

The power of Ethical Management is an evolved management style described in book format by Dr. Kenneth Blanchard and Norman Vincent Peale. The basis of this theory is outlined in five practical ethically-based principles: PURPOSE, PRIDE, PATIENCE, PERSISTENCE AND PERSPECTIVE.

In relating these principles to our own dental environments, we should begin by asking ourselves some basic questions.

☐ Principle #1: The Power of Individual Purpose:

Question: Can I think of a recent example of a difficult choice I made in the office because my principles were more important than other factors? How did this purpose clarify what I can and cannot do?

☐ Principle #2: The Power of Individual Pride:

Question: Can I recall a situation in which my purpose was understood and recognized by other team members or patients? Do I feel personally confirmed that my behaviour is consistent with my purpose?

☐ Principle #3: The Power of Individual Patience:

Question: Do I stay in touch with the big picture when making decisions that affect the practice? Am I learning to "let go" and focus on other people as sources of solutions to problems?

☐ Principle #4: The Power of Individual Persistence:

Question: How do I react to being personally or professionally criticized for the position I take on my style of practice and my beliefs about prosperity in dentistry?

☐ Principle #5: The Power of Individual Perspective:



"The Old Papa"

There is an "old papa" of dentistry. He is a professional first and he exists within us and our organizations. He told us many stories that were true for him. He believed that being prosperous was a matter of working hard and providing our best to patients. As a result, our lives would be predictably successful. The "old papa" is still alive and counselling many of the young people who come into dentistry today. They graduate from fourth year with papa's expectations of wealth and the good life firmly in their hearts. And not enough business skills to make it happen.

(See first paragraph of this column.)

Question: Do I take time each day to quietly reflect and focus on what is deeply important to me? Do I communicate these beliefs to my support network?

"Individuals need to clarify, not cheat, to win".

Values and ethics play a central function in our "work life" since they act as predictors of whether or not we have the foundational strength of character to forge ahead in an environment of uncertainty. In terms of the daily operation of the practice, values influence organizational culture and cohesiveness, communications, conflict management, stress

reduction, personal and organizational synergy and goal-directed performance. **As each of us clarify a values point of view on life, the practice evolves or fails to thrive, accordingly.** In the work that I do with dental practices, the issue of a values focus is the **critical factor for predicting success.** It begins with the dentist as the one around which everything else happens. And the practice grows from the strength of character and purpose of this one individual, and his/her people, processes and procedures.

As this is my final article on Practice Prosperity, I would like to leave you with an exercise. You can do it privately or with partners or team. It is an interesting thing to do with your spouse, or significant other, and older children.

Listed below are a number of values. Taking your time, rank the importance of these values to you. Choose the three most important values and share your values with someone with whom you interact. Discuss an example of the choices you have made in your life based on your values. Talk about what has happened as a result of these choices.

1. Justice
2. Humanitarianism
3. Money
4. Achievement
5. Wisdom
6. Honesty
7. Equality
8. Knowledge
9. Love
10. Autonomy

What you may discover within this exercise is that values conflict can exist within you interpersonally or among your partners, team or within your personal relationships. Values conflict is the primary cause of communication prob-

lems and long-term relationship breakdown. If you discover that "values work" may be useful to you in focusing your position on life, please write us for a reading bibliography and information on self-directed learning programs. Δ

Claudia Anderson is President of Anderson Programs Inc., Vancouver, B.C. She graduated from the University of Manitoba in 1965 with a R.D.H. and is presently a masters candidate in educational psychology. Claudia lectures part-time at the University of British Columbia, Faculty of Dentistry. Anderson Programs Inc., is a consulting company that works with dentists in the areas of strategic planning and practice management.



"The New Papa"

The new papa is a businessman. He's hard-nosed, internally aggressive and suspicious. He "hatched" out of our fear of losing control and runs a tight ship. He tells us prosperity is a result of solid business principles, budgets, projections, analyses and market shares. He constantly compares us with others. He is unrelenting in his push to have us increase practice gross and lower operating expenses. He applauds the team marketing effort and admonishes us to do as much as we can while we can. He's sharpened us all up. He's caused some of us to lose heart but he's got the "controls" we need, so we listen.

(See the first paragraph of this column.)

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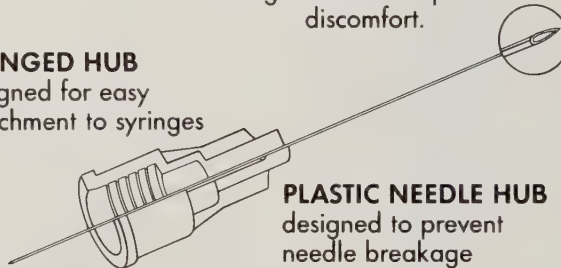
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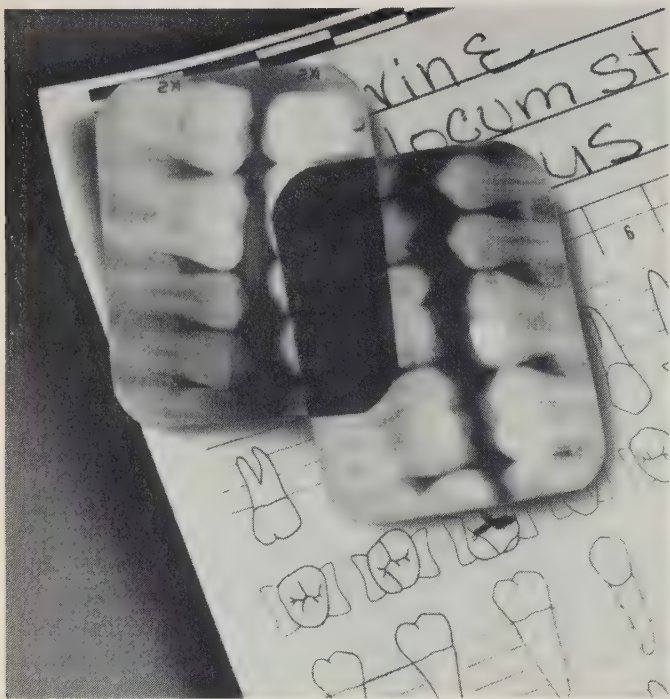
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Diet and Dental Caries

R.C. Burgess, BSc, DDS, MSc

Ms. N.E. Burgess, BSc, MEd

Faculty of Dentistry,
University of Toronto

Introduction

Dental caries is one of the most prevalent diseases afflicting mankind. Both incidence and severity have climbed dramatically since the industrial revolution, reaching peaks in developed countries in the 1950s.^{1,2} Widespread use of preventive measures during the past 25 years has started to reverse this historic trend, at least for children and young adults.³ Thus, a generation is reaching adulthood with complete dentitions and many fewer decayed teeth than before.

This young generation's parents, now 30 to 50 years old, were highly caries-prone as children and have teeth that are heavily restored. Nevertheless, recent surveys indicate an increasing proportion of these adults are keeping their natural teeth, and that the mean number of natural teeth retained per dentate adult has also increased over the past 20 years.⁴ These changes emphasize the need for effective preventive methods to minimize dental caries in adults, especially seniors.

The decrease in juvenile caries has not occurred evenly throughout the population. About 30 per cent of the present United States child population has little or no caries. At the other extreme, 20 per cent is highly susceptible and experiences 60 per cent of all carious lesions found in children.⁵ A similar situation is believed to exist among Canadian children. Professionally applied preventive measures could be used more effectively if these high-risk children could be identified on the basis of etiologic factors.

Etiology of Dental Caries

Three main factors must be simultaneously present for dental caries to occur: 1) microbial dental plaque 2) teeth susceptible to caries and 3) a dietary pattern which provides a frequent supply of fermentable carbohydrate. When these three factors have co-existed for a sufficient length of time, the earliest sign of caries,

a "white spot" lesion can be clinically observed. Experimentally, such lesions can be produced in only 23 days in subjects who refrain from oral hygiene and ingest sucrose frequently.⁶ A "white spot" lesion, however, represents only the early dissolution of subsurface enamel; the tooth surface remains practically intact. Such lesions can be reversed if the triad of factors is broken or can progress to frank cavitation if the cariogenic factors persist for more than a year. This reversibility of the carious process at its earliest stages is exploited in most preventive approaches.

Caries results from the action of organic acids which are produced by plaque micro-organisms fueled by carbohydrates. Acid production causes plaque pH to fall, resulting in enamel demineralization and diffusion of calcium and phosphorus into the plaque. Saliva serves to dilute and buffer the acid, restoring the plaque pH to neutral. Remineralization occurs as a result of reverse flow of calcium and phosphorus back into the enamel. Understanding the dynamic nature of the demineralization/remineralization process is key in designing caries control strategies.

Microbial dental plaque

The oral cavity provides a suitable environment for many bacterial species because of its ideal temperature and humidity, and its rich source of nutrients from diet and saliva. Soon after eruption, the teeth become coated with a plaque of salivary precipitate and viable micro-organisms.⁷ Although dental plaque contains dozens of microbial species, *Streptococcus mutans* is considered most cariogenic because of its prodigious ability to produce acid from fermentable carbohydrate and its ability to survive in a highly acidic environment. It is also capable of producing sticky polymers from sucrose that increase its ability to adhere to, and accumulate on, tooth surfaces.

Infants are usually infected with

S. mutans by their mothers.⁸ An extensive Swedish study has established that measures to decrease maternal salivary *S. mutans* counts by eliminating carious lesions, adopting good dietary practices and selectively using chlorhexidine therapy resulted in delayed implantation of the organism in their infants and much lower caries rates in both mothers and children.^{9,10} Studies are now in progress to determine if these principles can be used on a public health basis.

Nutrition and caries susceptibility of teeth

The well documented effects of nutritional deficiencies on general and specific tissue health lead us to expect that susceptibility of teeth to decay might be influenced by nutritional status during tooth formation and after tooth eruption.

It has been known for more than 30 years that caries susceptibility can be substantially reduced by adequately supplementing fluoride intake via the drinking water. Part of this fluoridation effect is undoubtedly due to a topical strengthening of recently erupted teeth by the low-levels of fluoride present in the saliva.^{11,12} Daily use of fluoride dentifrice or mouthwash can probably duplicate this topical effect for individuals in non-fluoridated areas. Results of clinical studies in Ireland, the United Kingdom and the United States indicate the caries rate is at least 35 per cent lower in fluoridated communities than in non-fluoridated ones.¹³⁻¹⁶ These results suggest a continued need for pre-eruptive, systemic fluoride as well as post-eruptive fluoride, if caries is to be minimized.

A second nutritional influence seems to be emerging in several Third World countries. Children who suffer from protein-energy malnutrition during tooth development exhibit enamel hypoplasia when teeth erupt, and these teeth have greatly increased susceptibility to caries.¹⁷⁻¹⁹ Experiments in rats indicate that the primary nutritional problem is protein defi-

ciency which results in permanent abnormalities in enamel and salivary gland structure, as well as higher caries susceptibility.^{20,21} This condition underlines the massive caries problem that could occur in developing countries if the increasing use of sugar is superimposed on dental tissues malformed during periods of prior protein deficiency.

Dietary factors in caries production

For centuries, diet has been suspected of influencing dental caries. It was only in 1950, however, that experiments in rats showed that a normally cariogenic diet would not cause caries if fed by stomach tube; caries resulted only when the sugar-containing diet came in contact with teeth.²² In fact, the dental plaque in humans fed long term by stomach tube loses most of its ability to degrade sugars to organic acids. This observation also indicates that the low level of glucose normally found in salivary secretions is insufficient to promote acid production, much less to cause enamel demineralization.

Numerous animal and human studies have established that caries is minimal if the diet is low in fermentable carbohydrate (i.e. sugars rapidly converted to organic acids by *S. mutans* and other plaque organisms).²³ On a population basis, Sreebny observed that a significant correlation exists between sugar availability per person per day and the average number of decayed, missing and filled teeth in 12-year-old children of 47 countries.²⁴ However, the relationship between sugar intake and caries is more complicated than Sreebny's results suggest. The famous Vipeholm study published in 1954²⁵ found that humans could ingest large amounts of sucrose (up to 300 grams per day) with little resulting caries if the sugar was dissolved in water and consumed only at meal times. When a small part of this daily sugar intake was consumed frequently between meals and in a slowly soluble, more sticky form such as toffee, the caries rate, on both enamel and root surfaces, increased dramatically.

Today, ethical considerations and the relatively long period required for human caries development, preclude properly controlled human clinical trials on the relationship between diet and caries. Experiments in rats have been useful in clarifying this relationship, because it takes only three to five weeks to produce rat caries, and complete control is possible over both the frequency and duration of food intake.²⁶ Under these conditions, rats fed a cariogenic diet only two or three

times a day develop little or no caries,²⁷ presumably because the process of remineralization can repair any damage done by these infrequent acidogenic challenges. As the frequency of sugar exposures increased, however, both the number and the size of carious lesions increased proportionally.^{26,27} Thus, there is some scientific support for the professional recommendation to restrict between-meal intake of sugar-containing snacks to one brief period in the day. This regimen not only limits cariogenic demineralization but also maximizes the time available for remineralization of any early lesions.²⁸

The most extreme effect of prolonged tooth exposure to fermentable carbohydrate is baby bottle caries or nursing bottle syndrome. This condition results from the practice of making milk, juice or sweetened beverages available to infants virtually on demand, and particularly when the infant is being put to sleep. The much-reduced salivary flow during sleep allows the fluid to pool around the teeth for long periods of time. The best way to prevent this problem is to counsel new mothers to establish regular bottle-feeding times for milk and juices, and to avoid using the bottle as a pacifier at night and nap time. As soon as the infant can drink with ease from a cup, at about one year of age, use of the bottle should be discontinued.

The common sugars — sucrose, lactose, glucose, fructose and maltose, present in fruit, dairy products and other sugar-containing foods — are all readily fermentable. While there is some variation in the amount of animal caries produced by these common sugars, caries could not be prevented by substituting one for another.²⁹ This conclusion is supported by human studies which indicate acid production in dental plaque from sucrose, glucose, fructose or maltose is very similar, and from mannose or lactose, only slightly less.^{30,31}

By contrast, the sugar alcohols or polyols such as sorbitol, mannitol and xylitol, qualify as desirable "sugar substitutes" from the dental health standpoint, as they are not readily fermented to acid by plaque micro-organisms.³¹ These naturally occurring substances provide a sweetness similar to sucrose and contribute to foods most of the desired physical properties of sugar. Sorbitol and mannitol have been used for years in chewing gums, toothpastes and lozenges, and have low cariogenic potential.^{32,33} Xylitol deserves greater consideration since a major clinical study showed it remains virtually unfermentable by plaque organisms even after 12 months

of daily use.³⁴ Animal^{35,36} and human³⁷⁻³⁹ studies have proven that xylitol is completely non-cariogenic and may also have anti-cariogenic properties. Laboratory results lend some support to this anti-cariogenic claim.³⁹ Xylitol could be used as a sucrose substitute in such products as sweetened, medicated cough drops and lozenges, as well as in a wide range of liquid medications that patients ingest frequently.⁴⁰

Energy reduced sweeteners, such as aspartame, are also used to replace sugar. Neither aspartame itself nor chewing gum containing it increase plaque acidity,⁴¹ and both are considered non-cariogenic.⁴² Since energy reduced sweeteners replace only the sweetness of sugar, aspartame use in food products may require addition of other ingredient(s) to replace other qualities provided by sugar such as bulk, texture, mouth-feel or crumb quality. From a dental health standpoint, it is important for the entire food item, not just the sweetener, to have low cariogenic potential.

Starch has long been considered to have a low cariogenicity. However, the more refined starches in many convenience foods are readily hydrolysed by salivary and plaque amylases^{43,44} and result in considerable acid production in plaque.^{31,45} Products containing these partially degraded starches can have a high cariogenic potential even if they do not contain common sugars or are sweetened with non-cariogenic sweeteners.

The sequence in which foods are eaten can influence their overall cariogenic potential. Cheese consumed immediately after ingestion of a sucrose solution or snack has been shown to limit the fall in plaque pH that normally occurs with sucrose alone.⁴⁶ This effect has been demonstrated with Cheddar, Monterey Jack and Swiss cheeses, even when they were consumed just before the sucrose challenge.⁴⁷ Several factors appear to contribute to this protective phenomenon. Cheeses stimulate an abundant salivary flow which helps to remove residual sugar from the mouth and neutralizes plaque acids. In addition, cheese promotes incorporation of high levels of calcium and phosphate into human dental plaque and reduces the experimental caries response to sucrose challenges.^{48,49} Whether this latter phenomenon is a general property of milk and milk products is yet to be determined.

Thus, the use of non-cariogenic items, such as cheese or sugarless gum,⁵⁰ shortly after eating sugar-containing food, will drastically increase the rate of clearance from the mouth and reduce the

amount of demineralizing acids produced in the plaque.

Prospects for total caries prevention

Factors related to microbial plaque, dietary substrate, and tooth/host susceptibility account for the etiologic aspects of dental caries and imply measures for caries control. In theory, it is possible to prevent caries entirely by eliminating one of these three major factors. In practice, however, even the most zealous application of one of these approaches will not completely prevent caries. The dramatic decrease in juvenile caries in the past 25 years suggests that the combined reasonable use of fluoride therapy, dietary control and oral hygiene is more effective and places fewer demands on the patient's lifestyle.

There remains, however, about 20 per cent of the child population who still experience severe dental caries. Epidemiologic data indicate these children tend to be from lower socioeconomic groups.^{14,51} We must determine why these children are at such high risk of caries, and how this risk can be minimized. Particular attention must be paid to systemic and topical fluoride usage, oral hygiene and patterns of ingestion of cariogenic foods. Also to be considered is the possibility of increased caries susceptibility because of nutritional imbalance during tooth formation.

Concurrently, concern is shifting to the adult population; most may expect their natural dentition to be retained throughout life. Some believe the measures which have been so successful for caries prevention in children will be equally effective in adults. This result is not necessarily so, particularly for those adults whose salivary flow is significantly depressed as a result of surgery, irradiation or drug therapy.^{52,53}

The potential of dietary strategies for caries prevention is substantial and includes factors related to the nature and form of foods consumed, as well as the frequency and sequence of their ingestion. Further research is needed to fully apply the potential that diet offers for caries prevention. Research will continue to provide implications for dietary counselling by health professionals and opportunities to develop products with low-cariogenic potential by the food and pharmaceutical industries. Δ

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1. The Egyptians squeezed cooked liver to obtain a juice which was topically applied to the eye to cure nightblindness. This juice was later discovered to be a rich source of the B vitamins.
2. A deficiency of pantothenic acid has been reported to cause "burning feet syndrome."
3. New research has identified a possible role for niacin in the treatment of heart disease.
4. Mineral oil, an over-the-counter laxative, helps the absorption of the fat-soluble vitamins.
5. Liver, dark green leafy vegetables, dried peas and beans and wheat germ are good food sources of thiamin.
6. Certain vitamins added to bacon during processing work to inhibit the formation of cancer-causing nitrosamines.
7. Total vegetarians, i.e. those who omit all meat, eggs and dairy products from their diets are at risk for a vitamin K deficiency.
8. Current research indicates that the role of vitamin C in aging may be related to its ability to control tissue damage caused by free radicals.
9. According to Canadian Food and Drug Regulations, vitamin D must be added to all dairy products such as cheese, yogurt, fluid and canned milk.
10. Beta-carotene is the provitamin form of vitamin A.

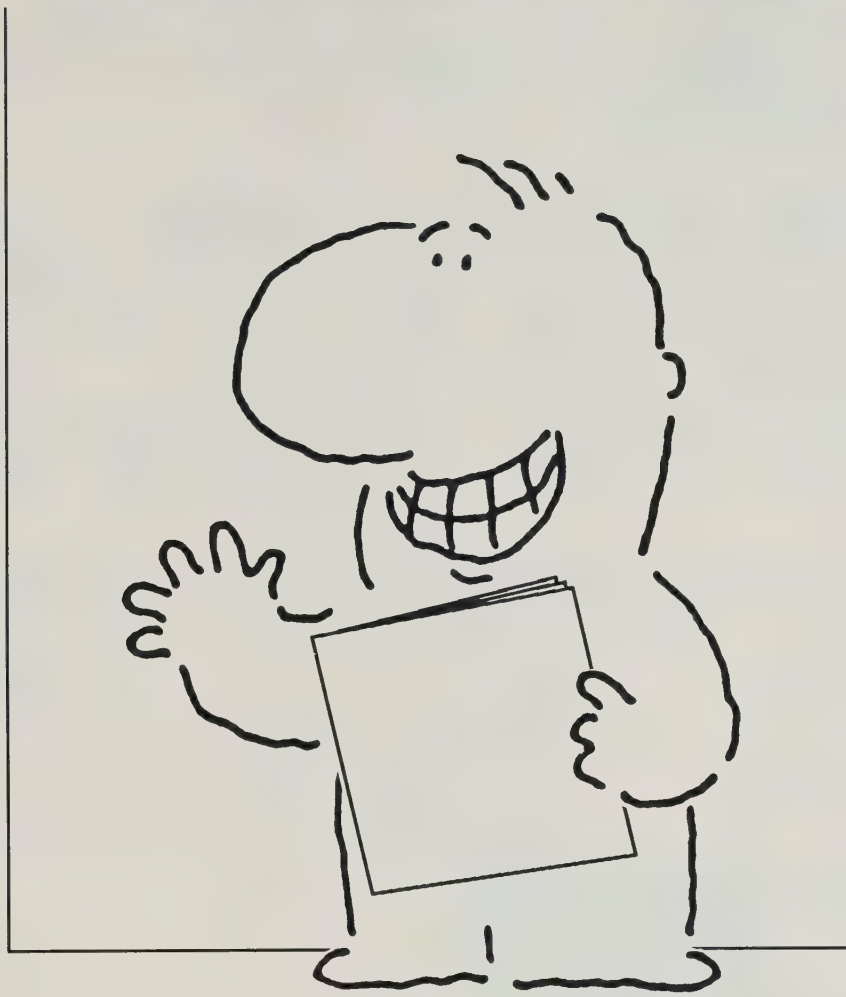
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Vitamin C and oral health

A. Barry Rubinoff, DDS, Dip Paedo
Patricia A. Latner, Dip Nutr, RPDt
Laura A. Pasut, MSc, RPDt

*"The unknown sickness began to spread itself amongst us accompanied by the most marvelous and extraordinary symptoms . . . inasmuch as some did lose all their strength and could not stand on their feet. Their legs became swollen, the sinews contracted and turned black as coal. . . . Others had their skin spotted with spots of blood of a purple colour; then did it creep up to their hips, thighs, shoulders, arms and neck. Their mouths became stinking, their gums so rotten that all the flesh did fall off, even to the root of the teeth. The disease spread out . . . so widely that, by February, out of our group of 110 there were not 10 left in good health. . . . We had already 8 men dead and there remained over 50 whom we had given up for lost."*¹

TABLE 1²

Amount of Vitamin C in some common foods

Food	Measure	Vit C (mg)
Strawberries (fz, sweetened)	250 ml	106
Orange Juice (fz, reconstituted)	250 ml	102
Kiwi (raw)	1 large	68
Broccoli (spears, boiled)	1 spear	51
Brussels sprouts (boiled)	125 ml	51
Grapefruit (pink, raw)	1/2	47
Cauliflower (boiled, drained)	125 ml	36
Potatoes (baked in skin)	1	27

Source: Health and Welfare Canada. Nutrient Value of Some Common Foods, revised 1987.

and complex information channels make these new finds immediately available to the health professional. The result — conventional thinking is challenged.

The purpose of this article is to review recent research on the role vitamin C plays in the maintenance of periodontal health. While it may be premature to draw conclusions and to drastically change current practices, it is not too early to consider vitamin C's potential for lowering the risk of periodontal diseases, diseases which are endemic in our population.

Basic Vitamin C facts

Commonly referred to as ascorbic acid, vitamin C is a member of the water soluble group of vitamins. Known for its fragility, this nutrient is sensitive to heat, light and oxygen, thereby requiring careful attention to food conservation practices. **Table 1** highlights some actual vitamin C values in food.²

With an average tissue store in humans of 20 mg/kg body weight, the overall storage capacity is low, requiring a regular intake to ensure optimal health.³ The Recommended Nutrient Intakes (RNI) for vitamin C in this country are illustrated in **Table 2**, with breakdown by age.⁴

Vitamin C is necessary for the production of collagen, the intercellular "cement" that gives structure to muscles, vascular tissues, bones and cartilage. It contributes directly to the health

TABLE 2⁴

Recommended nutrient intake for Vitamin C

Age	mg/day
Infants — 3 years	20
4 — 6	25
7 — 9M	35
F	30
10 — 12 M	40
F	40
13 — 15 M	50
F	45
16 — 18 M	55
F	45
19 — 24 M	60
F	45
25 — 49 M	60
F	45
50 — 74 M	60
F	45
75 + M	60
F	45
Pregnancy	+ 20
Lactation	+ 30

Source: Health and Welfare Canada.
Recommended Nutrient Intakes for
Canadians, 1982.

of bones and teeth.³ Both early and late deficiency signs and symptoms are presented in **Table 3**.

While accounts like this are unlikely today, they nevertheless provide a powerful reminder of the importance of vitamin C. Not "officially" discovered until the twentieth century, descriptions of the disease, scurvy, date back to the thirteenth century. First documented in an experiment by British naval physician, James Lind, in 1753 in his "Treatise on the Scurvy", almost 50 years passed before acceptance of his original recommendations.¹ In other words, thousands more lives were lost before medical science altered its practices.

Vitamin research is not what it used to be. The prevention of the classical vitamin deficiency diseases is no longer the end point goal of today's research. Investigations now concentrate on the pursuit of knowledge into the possible role of vitamins in the treatment and/or prevention of chronic diseases. Sophisticated

More recently, vitamin C has been implicated in the protection of gingival tissue from infections through its involvement in ensuring optimal activity of the white blood cells.⁵ It is these two functions, one in collagen metabolism and one in immunity, that have focused interest in vitamin C in periodontal health and disease.

Periodontal disease

Epidemiological reports on the prevalence and the incidence of periodontal disease are numerous. Reports of investigations first appeared in the 1940s.⁶ Interest has been sustained by various surveys which indicate a positive linear relationship between periodontal disease and age.^{7,8}

Periodontal diseases include a variety of maladies in which the supporting structures of the teeth are destroyed leaving the teeth vulnerable. The two predominant diseases are gingivitis, inflammation limited to the gingivae, and periodontitis, inflammation of the supporting structures (connective tissue of the periodontal ligament, cementum and bone).

Studies agree on the following points about periodontal disease.

- it is a major cause of tooth loss after the age of 35
- it affects 75 per cent of adults
- gingivitis begins in early childhood
- periodontitis increases linearly up to 40-50 years of age
- these are opportunistic infections
- adult periodontitis is the most common type
- periodontitis is not always progressive in its destruction

Although actual data is lacking, most surveys and studies suggest that the prevalence of simple gingivitis decreases with age, mild periodontitis increases slightly with age, and severe periodontitis afflicts a small segment, 8 per cent or less, of the population.⁹

The etiology of periodontal diseases is thought to be due to microbial agents that reside in dental plaque. Different types of periodontal diseases have different groups of microorganisms that predominate.^{10,11,12,13}

Recently periodontitis has been found to be characterized by "short bursts" of active disease, followed by periods of quiescence, rather than a continually progressing destructive disease. Plaque and gingivitis are not necessarily precursors of periodontal disease.¹⁴

Blood cells have an important role in the immune response to dental plaque microorganisms. Polymorphonuclear neutrophils (PMN), align themselves between the microorganisms and the gingival tissues,

TABLE 3

Vitamin C deficiency signs

Early Stage*	Late Stage
• lassitude • fatigue • anorexia • muscular pain • increased susceptibility to infections	• swollen bleeding gingivae • weakening of collagenous structure • haemorrhages in many organs • hematomas in the thighs • anemia and alteration of protein metabolism
* These symptoms are common to many other disorders	

ingesting and digesting the microorganisms.¹⁵ An impaired PMN function in individuals is associated with an increased incidence and severity of periodontal disease.¹⁶ The periodontal disease is not clearly understood.

Is there a role for Vitamin C in periodontal disease?

A number of animal studies using guinea pigs or monkeys (neither species produce vitamin C and must obtain it from their diet) examined the effects of subclinical vitamin C deficiency on gingival tissue, teeth and bones. The vitamin C deficient animals exhibited edema of the gingival connective tissue, collagen degeneration, haemorrhage, decreased mineral content of alveolar bone, and tooth mobility. In the case of subclinical ascorbic acid deficiency, impairment of PMN function was observed, specifically the chemotactic and phagocytic activities.^{17,18} In 1981, Alvares et al showed an increase in the *vivo* permeability of the gingival sulcular epithelium in scorbutic young adult monkeys. This preceded by two to three weeks the onset of gingivitis.¹⁹

In this area of research, many of the human studies have not been well designed. However, earlier reports did lead to the classical association between vitamin C deficiency and the clinical features of bleeding gingivae, loss of tooth support and tooth mobility.²⁰

Recent nutrient intake data from the U.S. National Health and Nutrition Examination Survey (NHANES I) has found a negative correlation between dietary vitamin C and periodontal health.²¹ Previous support for this association has been equivocal due to poor study designs.

More recently better designed human studies have investigated the effectiveness of a vitamin C supplement given to individuals with a low or inadequate intake of this nutrient.²² The results of clinical trials providing vitamin C supplements at the levels of 60 or 70 mg per day (amounts similar to the RNI), has led to the following observations:

- increased gingival proline and hydroxyproline content
- decreased gingival bleeding
- increased collagen producing fibroblasts
- enhanced white blood cell formation
- increased number of epithelial attachments.

However, the results of trials using megadoses of vitamin C on individuals consuming adequate intakes of this nutrient, have not demonstrated a predictable response on gingival clinical parameters.^{23,24} Further research will be necessary to determine if individuals with normal ascorbic acid status will have improvement in periodontal health with vitamin C supplementation.

Summary

Maintaining natural dentition is a realistic goal given today's improved caries control and attention to good oral hygiene. Expanding knowledge in the area of periodontal diseases provides further insight into health promotion practices which can be effective in preventing tooth loss.

Vitamin C's role in maintaining the health of teeth and gingivae remains unchallenged. Now clinical evidence indicates that vitamin C functions in improving host defence mechanisms and is thereby implicated in preserving periodontal health. Common sense tells us that the monitoring of the vitamin C status of individuals, especially those at high risk (e.g., diabetics, smokers, elderly, etc.) for inadequate intakes, will yield positive results for periodontal health. Patient education programs that stress the importance of good nutrition, while at the same time providing practical information for the selection of a well balanced diet, are simple measures that will benefit many. Δ

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Answers: 'Your Vitamin IQ' questions

1. FALSE. The vitamin in liver used to cure nightblindness is vitamin A (retinol). Vitamin A helps form the compound rhodopsin (also known as visual purple) which is necessary for good vision.
2. TRUE. A deficiency of pantothenic acid can lead to numbness, prickling sensation and burning sensation of the feet and hands due to circulatory disturbances. First reported among prisoners in Japan and the Philippines during World War II.
Later reported as a chronic condition in "couch potatoes."
3. TRUE. Possible is the key word here. Preliminary research results are promising, but as of yet, inconclusive.

Niacin. . .

maybe. . .

maybe. . .

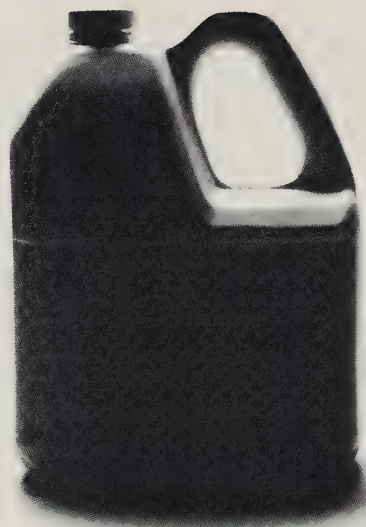
maybe. . .

4. FALSE. Mineral oil acts as a solvent for the fat soluble vitamins and thus prevents their absorption.
Mineral oil also acts as a cheap and dangerous suntan lotion.
5. FALSE. These are good food sources of folic acid, a B vitamin that aids in the formation of red blood cells as well as the body's genetic material.
They also make a delightful children's song: "Oats, peas, beans and barley grow. . ."
6. TRUE. Vitamins E and C added to bacon help block the formation of cancer-causing nitrosamines.
Is there any vitamin which can block the formation of the green fuzz on the leftovers "doing their time" in the fridge?
7. FALSE. Total vegetarians are at risk for vitamin B₁₂ deficiency since it is almost exclusively found in animal products.
They are also at risk of being stoned by meat-eaters at elegant dinner parties.
8. TRUE. Vitamin C is an antioxidant which can help destroy the free radicals which can cause tissue damage.
Down with free radicals! Up with vitamin C!
9. FALSE. Vitamin D is only added to fluid and powdered milk.
*Yogurt and cheese, eat your hearts out please.
Calcium's "in," so for now you win.
But here's a hunch, conceived over brunch
When "D" is the big one on everyone's tongue,
You guys are "out to lunch."*
10. TRUE. Beta-carotene is a member of the group of substances known as carotenoids. It is known to have the greatest provitamin activity of all carotenoids.
*Beta and the Carotenoids are presently wowing audiences of vitamin-lovers at the Copa.
Catch their act!*

The Vitamin Information Centre is an information service of Hoffmann-La Roche Limited

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Nutritional Assessment: A Computer-Based Dietary Analysis

G.W. Thompson, DDS, PhD, FRCD(C)
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M. Slusar, MSc A. Folkins, BSc

A Nutritional Assessment computer program has been established at the Faculty of Dentistry, University of Alberta as a service to dentists and other health professionals. It is intended as a method of screening to determine whether or not there is any potential for nutritional risk and to provide data for use in counselling individuals about their eating habits.

Dentists as members of the health care team are in a good position to identify individuals who would benefit by modifying their diets to improve their general and dental health. The purpose of this article is to describe the program.

A self-reported three-day food record was selected for the Nutritional Assessment program as being the best compromise between obtaining an atypical food intake using the 24 hour recall method and loss of information due to boredom in completing a record for a week or longer. Although methodology for collecting data to estimate an individual's food intake is considered imperfect, individuals can provide fairly accurate food intakes for short periods of time and three-day food records are widely used.¹

The program is a computer-based diet analysis which compares an individual's food intake to nutrition recommendations. The printout shows the average daily intake of selected nutrients, nutritional adequacy in relation to recommended intakes for Canadians, energy nutrient balance and sugar consumption.

Nutritional Assessment

If a dentist is interested in a Nutritional Assessment for a patient, the patient is asked to complete a form. The patient is instructed to answer questions about specific characteristics (sex, age, weight, pregnancy, lactation) to allow a comparison to be made between the individual's intake and recommended intakes. The patient keeps a three-day written record of all foods and beverages consumed following the instructions provided. The patient returns the package to the Faculty of Dentistry for analysis of the food record and if clarification about the type or amount of food is required, follow-up is done by telephone. The report in the form

FIGURE 1

Sample printout of page 2 of the Nutritional Assessment report showing an individual's average daily intakes and current nutrition recommendations. Individual is male, 23 years of age, 63 kg, 175 cm tall

Average Daily Intake of Selected Nutrients			
Nutrient	Your average daily intake		Intakes currently suggested
Energy	2356 kcal	(Dependent on individual)	
	9852 kJ		
Protein	73.0 g	(See % RNI below)	
Fat	80.4 g	(See balance below)	
Carbohydrate	342.2 g	(See balance below)	
Sugars	167.6 g	(See sugar intake below)	
Sucrose	50.7 g		
Fructose	49.2 g		
Glucose	51.2 g		
Lactose	9.7 g		
Unclassified	5.5 g		
Dietary Fibre	9.3 g*	(Dependent on individual)	
Sodium	2.9 g	(0.6 g)	
Potassium	3.2 g	(1.9 g)	
How Adequate Was Your Nutrient Intake			
Your intake as a percentage of recommended daily nutrient intake (RNI) ¹			
Protein	141%	Folacin	121%
Vitamin A	64%*	Vitamin B12	167%
Vitamin D	95%*	Calcium	59%*
Vitamin C	274%	Phosphorus	156%
Thiamin	146%	Magnesium	135%
Riboflavin	106%	Iron	177%
Niacin	199%	Zinc	140%
Vitamin B6	160%		
How Well Balanced Was Your Energy Nutrient Intake			
Source of energy	Energy intake from various nutrients		Percentages currently suggested
	Your percentages		
Protein	12%	(8 to 15%)	
Fat	30%	(15 to 35%)	
Carbohydrate	57%	(50 to 60%)	
How Much Sugar Was Consumed			
Source of energy	Energy intake from sugars		Current suggestion ¹
	Your percentage		
Sugars	28%*	(Keep low in relation to other carbohydrates)	

* See Page 3.

¹ Health and Welfare Canada. 1983. "Recommended Nutrient Intakes for Canadians". Ottawa K1A 0S9

* See Page 3.

¹ Health and Welfare Canada. 1983. "Recommended Nutrient Intakes for Canadians". Ottawa K1A 0S9

of a computer printout is sent to the dentist.

Computerized Nutritional Assessment

The printout of information consists of three pages. The first page is a summary page that lists the individual's name and specific characteristics, the dates of the food record, and a notation about the format of the information on the next page. The second page contains four major sections about the individual's intake and currently suggested intakes: (1) the average daily intake of selected nutrients, (2) nutrient adequacy for 15 selected key nutrients, (3) energy nutrient balance, and (4) sugar consumption. The third page contains messages about nutrient intakes that may be too low, too high, or not balanced.

A sample printout of the second page of the Nutritional Assessment report is shown in Fig. 1. The format of the printout was designed to be similar to nutrition labels for foods as outlined by Health and Welfare Canada.² Energy, protein, fat, and carbohydrate, considered to be "core" nutrients for nutrition labelling purposes, are included in the first section. Other selected nutrients included in this section are total sugars, dietary fibre, sodium, and potassium. A profile of the sugars is also shown.

Amounts of protein, vitamins and minerals, shown in the second section, are expressed as percentages of recommended daily nutrient intakes adjusted for the individual's characteristics (sex, age, weight, pregnancy, lactation), as outlined in the "Recommended Nutrient Intakes for Canadians" (RNI).³ Percentages are used to express amounts of vitamins and minerals in a similar way to the information given on product labels and are thought to be widely understood by consumers.⁴

The third section shows the energy nutrient balance as a percentage of energy intake from protein, fat, and carbohydrate for the individual. Currently suggested percentages shown in brackets are from the RNI³ and the "Nutrition Recommendations for Canadians."⁵

Sugar consumption as well as being expressed in grams in the first section is also expressed as a percentage of the energy intake from sugar in the fourth section. The recommendation about keeping sugars low in relation to other carbohydrates, shown in brackets, is from the RNI.³

Nutrient values that differ from recommended or suggested intakes are indicated with an asterisk (*) and provide the

FIGURE 2

Sample printout of page 3 of the Nutritional Assessment report showing examples of messages generated when nutrient intakes are different from recommendations. These are for the individual described in Fig. 1

Your dietary fibre intake may be too low. Good sources of dietary fibre are bran cereals, shredded wheat, rolled oats, whole grain breads, baked beans, cooked dried peas, beans and lentils, fruits, vegetables, and nuts.

Your vitamin A intake may be too low. Good sources of vitamin A are liver, carrots, pumpkin, spinach, sweet potato, broccoli, apricots, winter squash, tomatoes, cantaloupe, peaches, eggs, butter and margarine.

Your vitamin D intake may be too low. Good sources of vitamin D are milk, salmon, sardines, shrimp, liver, and egg yolk.

Your calcium intake may be too low. Good sources of calcium are milk, firm cheese, yogurt, canned sardines and salmon with bones, spinach, broccoli, nuts and sesame seeds.

Not having met 100% of the Recommended Nutrient Intakes does not necessarily mean an inadequate intake because the RNI is set to allow a margin of safety. To maintain a low chance of an inadequate intake, however, you should aim to meet the RNI.

Your sugar intake may be too high. Try limiting your intake of candy, chocolate bars, cakes, cookies, ice cream, pies, soft drinks except diet drinks, fruit-flavoured drinks, flavoured milk, sweetened yogurt, sweetened fruit juices, canned fruit, dried fruit, jam, honey, sweetened chewing gum, and sweetened cereals.

necessary signals to generate messages about the individual's intake and sources of nutrients. A sample of the third page of the computer printout is shown in Fig. 2. Although nutrient data sometimes appear without explanation it is usually helpful to both the counsellor and the individual if criteria for interpretation and messages about how the diet may be improved are included on the printout.⁶

Computerized Diet Standards

The nutrient values outlined in the "Recommended Nutrient Intakes for Canadians" (RNI) are used as the standards for nutritional adequacy. Although caution must be used when assessing the adequacy of an individual's observed intake against the standard because of the wide variation in individual requirements, the RNI is considered to be the "appropriate target for the lower level of the planned intake because it offers assurance of a low level of risk of inadequate intake".³

At any time that a message is generated about the possibility that a nutrient intake is too low the following message is also printed: "Not having met 100 per cent of the Recommended Nutrient Intakes does not necessarily mean an inadequate intake because the RNI is set to allow a margin of safety. To maintain a low chance of an inadequate intake, however, you should aim to meet the RNI".

A message about sources of dietary fibre is generated if the individual's intake is below eight grams per 1000 kilocalories, an amount that is within the range of current average dietary fibre consumption,⁷ and consistent with the general recommendation to increase the consumption of fibre-containing foods.⁸

Health and Welfare Canada recommends that individuals minimize their consumption of salt but there are no upper limits of sodium specified. Therefore, a message about too much sodium is generated if the individual's intake is higher than the upper level of the range published by the Food and Nutrition Board.⁹

For assessing energy nutrient balance the recommended intakes from the RNI of a minimum of 15 per cent of energy from fat and 50 per cent of energy from carbohydrate are used. The recommended intake of a maximum of 35 per cent of energy from fat is one of the guidelines in the "Nutrition Recommendations for Canadians".⁵

A message is generated about the possibility of too much sugar consumption if the individual's intake provides more than 20 per cent of the total energy.¹⁰

Nutrient Database

Kellogg Canada Inc. initiated the nutrient database used for the diet analysis and it was further developed by the Faculty of

Dentistry. The primary source of the nutrient values of the database is Health and Welfare's Canadian Nutrient File¹¹ but the database also includes nutrient values from a variety of other published sources and food manufacturers. The database is updated regularly as food products change and more analyzed nutrient values become available.

Dental Health Considerations

Food intake can influence dental disease; especially from the local action of sugars in the mouth. The computer generated printout will highlight if a person is taking a high quantity of sugar in the diet. Many foods have a sugar content that is not known to the person eating the foods, and they may be surprised at the sugar levels being consumed.

The percentage of sugar in the diet is shown and messages with suggestions are produced in the printouts specifically related to overall nutrition assessment.

Nutritional Assessment Examples

Having a quantitative Nutritional Assessment is very helpful in identifying if the food intake meets all of the recommended standards, that is, if it provides an adequate intake of some nutrients while at the same time, a limited intake of others. It is then possible to confirm that the individual's food intake meets the recommended nutritional standards or to identify the best changes to make in the food intake to result in appropriate changes in the nutrient intake.

Traditionally, Canada's Food Guide¹² has been used to assess the individual's food intake. It continues to be a useful tool for assessing nutrient adequacy in particular but it is more difficult to use in assessing those nutrients such as fat, sugar and sodium which should be present in limited amounts as they often tend to be hidden in a wide variety of foods. Also, its use in evaluating diets that have large numbers of combination foods can be quite complex.

Two examples of the computer printout of the Nutritional Assessment program are shown in Figs. 1 to 4. The first example is for a 23 year old male, 175 cm tall weighing 63 kg (Figs. 1 and 2). The individual consumed about one half of the amount of "milk and milk products" recommended in Canada's Food Guide contributing to an intake of less than 100 per cent of the RNI for vitamin D and calcium. Although other food groups were consumed in recommended amounts according to Canada's Food Guide, dietary fibre intake was low, the percentage

FIGURE 3

Example of a printout of the Nutritional Assessment report for an individual who is female, 28 years of age, 56 kg, 175 cm tall

Average Daily Intake of Selected Nutrients			
Nutrient	Your average daily intake		Intakes currently suggested
Energy	1847 kcal		(Dependent on individual)
	7730 kJ		
Protein	75.1 g		(See % RNI below)
Fat	80.6 g		(See balance below)
Carbohydrate	223.8 g		(See balance below)
Sugars	72.2 g		(See sugar intake below)
Sucrose	22.7 g		
Fructose	13.9 g		
Glucose	12.5 g		
Lactose	14.1 g		
Unclassified	7.7 g		
Dietary Fibre	27.5 g		(Dependent on individual)
Sodium	2.1 g		(0.5 g)
Potassium	2.6 g		(1.7 g)
How Adequate Was Your Nutrient Intake			
Your intake as a percentage of recommended daily nutrient intake (RNI) ¹			
Protein	179%	Folacin	223%
Vitamin A	204%	Vitamin B12	55%*
Vitamin D	142%	Calcium	168%
Vitamin C	64%*	Phosphorus	243%
Thiamin	211%	Magnesium	208%
Riboflavin	146%	Iron	105%
Niacin	196%	Zinc	145%
Vitamin B6	121%		
How Well Balanced Was Your Energy Nutrient Intake			
Source of energy	Energy intake from various nutrients Your percentages		Percentages currently suggested
Protein	16%*		(8 to 15%)
Fat	38%*		(15 to 35%)
Carbohydrate	47%*		(50 to 60%)
How Much Sugar Was Consumed			
Source of energy	Energy intake from sugars Your percentage		Current suggestion ¹
Sugars	15%		(Keep low in relation to other carbohydrates)
* See Page 3.			
¹ Health and Welfare Canada. 1983. "Recommended Nutrient Intakes for Canadians". Ottawa K1A 0S9			

* See Page 3.

¹ Health and Welfare Canada. 1983. "Recommended Nutrient Intakes for Canadians". Ottawa K1A 0S9

of energy from sugar very high, and the intake of vitamin A less than 100 per cent of the RNI.

The second example is for a 28 year old female, 175 cm tall weighing 56 kg (Figs. 3 and 4). The individual consumed about one half of the amount of "fruits and vegetables" recommended in Canada's Food Guide contributing to an intake of less than 100 per cent of the RNI for vitamin C. A heavy reliance on

cheese in the diet to meet the recommendation for "milk and milk products" and "meat, fish, poultry and alternates" contributed to a diet that provided less than 100 per cent of the RNI for vitamin B₁₂ while at the same time providing a very high intake of protein and fat and a relatively low intake of carbohydrate.

Summary

The Nutritional Assessment computer

program is intended to assist dentists and other health professionals with an evaluation of an individual's nutritional intake by identifying intake inadequacies, excesses, or imbalances. The assessment is not intended as a substitute for a visit to the appropriate health professional. An assessment report shows if an individual is selecting appropriate foods to meet dietary guidelines or could benefit from diet counselling. Δ

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Mrs. Slusar is Consulting Home Economist, Faculty of Dentistry and Instructor, Faculty of Home Economics.

Mr. Folkins is a Systems Analyst/Computer Programmer, Faculty of Dentistry.

Reprint requests to Dr. Thompson.

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4. Steele, P.J. and Cheney, M.C. Canada's system of nutrition labelling. *Rapport* 4(2): 1-3, 5, 1989.
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FIGURE 4

Example of a printout of the messages generated for the individual described in Fig. 3

Your vitamin B12 intake may be too low. Good sources of vitamin B12 are meat, poultry, fish, eggs, milk and cheese.

Your vitamin C intake may be too low. Good sources of vitamin C are vitaminized apple juice, oranges, orange juice, grapefruit, grapefruit juice, strawberries, broccoli, tomatoes, brussels sprouts, cauliflower, cantaloupe, cabbage and turnips.

Not having met 100% of the Recommended Nutrient Intakes does not necessarily mean an inadequate intake because the RNI is set to allow a margin of safety. To maintain a low chance of an inadequate intake, however, you should aim to meet the RNI.

Your energy intake from protein, fat and carbohydrates may not be well balanced.

You may be getting too much energy from protein foods. Try limiting your intake of protein foods such as meat, poultry, fish, eggs, and cheese.

You may be getting too much energy from high fat foods. Try limiting your intake of deep-fat fried foods, high fat desserts such as pies, cookies, cakes and ice cream, potato chips, peanut butter, nuts, cooking fats and oils, table fats, and high fat milk products.

You may not be getting enough energy from carbohydrates. Good sources of carbohydrates are whole grain and enriched breads and cereals, fruits, and vegetables.

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Obituaries/Nécrologie

Bishop, Ben A. A graduate of the University of Alberta in 1950, conducted a private dental practice in Vernon, B.C. until 1986. He then moved to Edmonton, Alta., and resumed practice with his daughter, Dr. Marjorie Miller, in 1988. He was a Life Member of the Canadian Dental Association.

Cooper, Richard. A graduate of the University of Toronto in 1969, he conducted a practice in Ottawa. He was very active in providing continuing dental education opportunities for Eastern Ontario dentists.

Larue, Charles A. Diplômé de l'École de médecine dentaire de l'Université Laval en 1920, le Dr Larue a tenu cabinet pendant longtemps à Ville Mont-Royal, dans le grand Montréal.

Leith, Abe. A graduate of the University of Toronto in 1928, Dr. Leith conducted a long-time dental practice in Montreal. He was a Life Member of the Canadian Dental Association.

Lustig, Eric A. Born in Yugoslavia in 1924, Dr. Lustig was graduated from the University of Alberta in 1959. He had conducted a practice in Nanaimo, British Columbia, and was retired.

Philp, William W. Dr. Philp was a graduate of the University of Toronto in 1925. He conducted a dental practice in Toronto and during the Second World War served with the Canadian Dental Corps.

Caries prevention with Xylitol

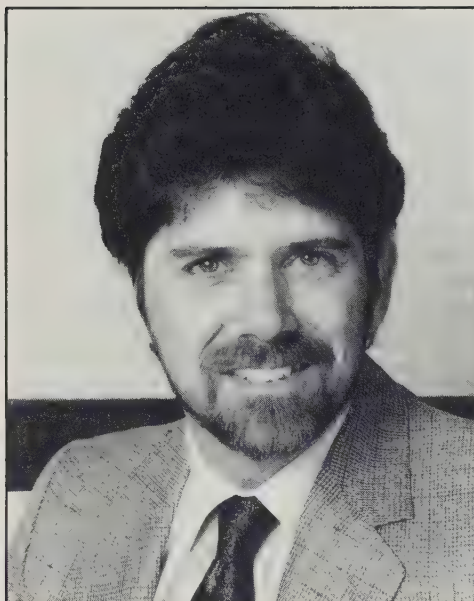
Barry R. Ashpole*
Toronto, Ont.

A report on an international symposium

A dozen caries researchers have concluded at an international symposium that xylitol "is unquestionably a non-cariogenic substance," according to Dr. Irwin Mandel, symposium chairman and director of the Center for Clinical Research in Dentistry, Columbia University, New York. "We also reached a general consensus that evidence supports a cariostatic claim for xylitol-containing gum," added Mandel, "... in other words, that such a product could help prevent caries or reduce the incidence of new caries." The meeting, held at the University of Michigan on January 27, 1988, included professionals from Canada, Switzerland and the United States, and had three main objectives — to examine critically the published scientific data on xylitol, to examine the mechanism of its action on caries, and to explore the kinds of claims and package labelling that would be appropriate for products containing xylitol. Dr. Mandel opened the discussion, remarking, "Recent rumours about the death of dental caries have been greatly exaggerated. One recent U.S. study noted that although caries is decreasing in young people, by the age of 17, there is still an average of 11 DMFS per child. I think it is highly appropriate that we discuss xylitol in detail and see how we can use this information to fight the remnants of caries."

Research

Reporting on the findings of ten human trials conducted in several different countries, Dr. Kauko Makinen, professor of dentistry and biochemistry at the University of Michigan, noted that the results have all been similar, namely "a dramatic



Barry R. Ashpole

reduction in the incidence of dental caries." In a 1972 study conducted in Turku, Finland, involving total sucrose substitution, "caries reduction with xylitol exceeded 82 per cent" reported Dr. Makinen. "A Soviet Union study in the late '70s showed a reduction in caries incidence of 73 per cent with a dose of about 30g per day. And in a WHO-sponsored study conducted in Thailand, French Polynesia, and Hungary (where children consumed up to 20g of xylitol in gums and candies daily), the researchers reported a protective effect of 37 per cent to 45 per cent. Finally, a recent two-phase study in Northern Finland found an overall reduction of 30 per cent to 57 per cent and of 59 per cent to 84 per cent among children considered at high risk for caries (with a daily dose of 7-10g per child)."

Dr. Daniel Kandelman, chairman of the Division of Preventative and Community

Dentistry at the University of Montreal, reported on a two year trial in Montreal measuring the effect of chewing gum containing two levels of xylitol on the incidence and progression of dental caries. The children in the study were participating in an ongoing preventative dental program at school, which included oral hygiene instruction and fluoride rinsing. "We found an average reduction of 55 per cent in net progression of decay after one year in the two experimental groups of children who chewed — under supervision — three sticks of 15 per cent and 65 per cent xylitol gum, compared with controls who received none. The children who chewed the xylitol gums had significantly fewer DMFS after the first year than controls did — an average of 1.58 surfaces vs. 3.28. And our second-year results so far indicate a similar reduction in decay." Dr. Kandelman concluded, "I believe chewing gum is an efficient way of using the caries-inhibiting properties of xylitol."

Mechanism of Xylitol

Dr. Charles Schachtele, professor of dentistry and microbiology at the University of Minnesota, gave an overview of the possible mechanisms of xylitol's action in the prevention of caries, noting that "xylitol may influence each of the major factors involved in the development of decay. It appears to have effects on the dietary substrates, the micro-organisms that cause decay, the anti-cariogenic factors in saliva, and the enamel portion of the tooth."

Most dental decay in humans is caused by *Streptococcus mutans*, one of the most acidic plaque bacteria, according to Dr. Walter Loesche, director of research at the School of Dentistry, University of Michigan. "However, *S mutans* doesn't

do well when sucrose is not around. That weakness is what xylitol and other polyols exploit," he commented. The panel noted that xylitol is not fermented to harmful acids by *S mutans* and, moreover, that there may be some direct effect of xylitol on *S mutans*. One theory is that xylitol is phosphorylated by *S mutans* while it is being transported into the cell, where it accumulates. "What may happen," said Dr. Schachtele, "is that xylitol-5-phosphate disrupts normal cell metabolism. For instance, it could alter cell wall formation. *S mutans* survives in the mouth because it can tolerate varying environmental conditions. Xylitol may make the bacterium more sensitive to its environment, and less likely to become dominant in plaque at caries-prone sites." The panel also noted that a reduced rate of plaque accumulation had been observed — as well as reduced levels of *S mutans* — when xylitol was supplied in the diet. Dr. Mandel summed up, "(The theory is that) xylitol is creating an environment that ecologically selects against *S mutans*."

Demineralization and remineralization equilibrium of tooth enamel

The panel noted that studies in rodents and humans support the theory that xylitol can enhance remineralization of teeth. Comparing the effect of sucrose and xylitol on tooth enamel, Dr. Loesche pointed out that "before sucrose is ingested, remineralization and demineralization are in equilibrium. But when you get a pulse of sucrose, the pH drops below the critical level and calcium comes out of the tooth. When xylitol is introduced into the mouth, the pH does not fall and no demineralization occurs." One



possible mechanism, suggested by Dr. Makinen, "is that polyols, including xylitol, stabilize calcium phosphate solutions." Dr. Theodore Kolourides, professor of dentistry at the University of Alabama, concurred: "We have observed that xylitol added to mineralizing solutions prevents calcium deposition on enamel surfaces, in contrast to the action of sucrose. Another possibility is that by keeping the enamel surface clean and the pathways open, xylitol may enhance remineralization."

Dosage and frequency

Next, the panel considered briefly the following question, posed by Dr. Mandel: "Would we speculate that the more often xylitol is consumed, the more it could make a difference?" Dr. Kandelman stated that "in the Montreal study, we did notice a relationship between dose and effect in the two groups. But I think if you increased the frequency — say, to six times a day you would get a better effect." Dr. Makinen supported this view, noting that "our studies in Finland indicate that a frequency of less than 1.4 sticks of gum a day produced a ques-

tionable effect or no effect at all. The number of intakes is crucial."

The terms

It was agreed by the panel that the terms "non-cariogenic," "cariostatic," and "anti-cariogenic" needed to be defined, since these terms would be used in product claims for xylitol. Dr. Mandel pointed out that "xylitol is unquestionably non-cariogenic. It is not fermented by oral bacteria." But he suggested the phrase "aids in the prevention of caries" as a definition of "cariostatic." Wordings such as 'Helps prevent formation of caries' or 'Helps fight cavities' were suggested as reasonable cariostatic product claims for xylitol chewing gum. "As far as an anticariogenic claim is concerned," noted Dr. Mandel, "it would appear that we need more clinical studies and clearer definitions of the progressive steps (of reversing caries)." In the summing-up by Dr. Mandel, he noted that "even though there are differences in views, I think there is basic agreement that xylitol is a worthwhile agent that people are excited about." △

*Barry R. Ashpole is a communications consultant to a number of companies in the pharmaceutical and food industries. Mr. Ashpole is the principal of Barry Ashpole and Associates Inc., Toronto, a firm specializing in health professional and patient education — and public awareness — programmes on specific disease and medical conditions, and health issues. He is established in the fields of medicine, dentistry and nutrition and is the editor of a number of specialist publications and author of many papers.

Author's note: xylitol is approved in Canada for use in chewing gums and pharmaceutical products. Finnsugar-Xyrofin (UK) Limited, the company which manufactures and markets xylitol, is currently seeking approvals from Health and Welfare Canada (Health Protection Branch) for acceptance of the natural sweetener in a wider range of consumer products.

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MICHIGAN, 1988: Reduction in Plaque

Three groups of students chewed 10 pieces of gum each per day, sweetened with xylitol, sorbitol or a xylitol/sorbitol mixture respectively. Two weeks later, the xylitol and xylitol/sorbitol groups showed a decrease in plaque from baseline values; the sorbitol group showed an increase.

UNIVERSITY OF MICHIGAN STUDY, 1988

THE MONTREAL CHEWING GUM STUDY, 1985-87

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Xylitol in chewing gum: A discussion on developing CDA guidelines for the recognition of food products with dental therapeutic claims

Dr. Hardy Limeback, BSc, PhD, DDS

Member

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Chairman

CDA Committee for Consumer Products Recognition

Introduction

The CDA's Consumer Products Recognition (CPR) Committee has given recognition to an increasing number of home-care dental products in the past few years. These have all been fluoride-containing toothpastes and mouthrinses. The anti-caries effect of these fluoridated products has been well established scientifically for over 30 years. It is for this reason that the CPR Committee has awarded such products the CDA Seal of Recognition. Use of the CDA Seal and the CDA Statement on product packaging is overseen by the Health Protection Branch which controls advertising of medications to the public.¹

New types of products, which manufacturers claim are effective in controlling various dental diseases, are entering the marketplace. There are plaque-dispersing and anti-plaque or anti-gingivitis mouthrinses, anti-calculus toothpastes, toothpastes specially formulated for children and toothpastes for sensitive adult teeth. Some of these products have already been evaluated by the CPR Committee for their therapeutic effectiveness against dental diseases. Recently, even food products with specific health claims related to dentistry, have been introduced. The CDA Board of Governors is aware of these new developments in dental therapeutics and has authorized the CPR Committee to undertake a scientific evaluation of a number of new types of products with dental therapeutic claims. One of these products is actually a food product with a therapeutic claim against dental caries.

The role of fermentable carbohydrates in the etiology of caries

The introduction of food products with anti-caries claims requires the CPR Committee to evaluate the current literature on the cariogenicity of foods. Food is one

of the main etiological factors involved in the caries process. For many years researchers have been studying how plaque bacteria convert dietary carbohydrate into organic acids resulting in enamel demineralization. Animal studies have shown that some types of carbohydrates are more cariogenic than others.² Cariogenicity of a food depends not only on the nature of the fermentable carbohydrate in it, but also on its consistency (e.g., sticky versus a liquid), the duration of ingestion (e.g., swallowed quickly versus chewed slowly), the frequency of ingestion (e.g., once a day versus several times a day) and the content of protective substances (e.g., phosphates). Whether a food is actually cariogenic in humans is difficult to study. Clinical investigations such as the Vipholm study³ are unlikely to be repeated because subjects ingesting cariogenic foods are at high risk of developing unwanted caries. There is sufficient evidence to conclude that any food containing fermentable carbohydrate has cariogenic potential. Many confections, snack foods and pediatric medicines fall within this group of foods. The recent report of the FDA Sugars Task Force in the USA concluded that:

"Current average and 90th percentile consumption levels of sugars contribute significantly to caries incidence."⁴

Xylitol and caries

Xylitol, a stable sugar alcohol, has been used for years in Europe, and recently in Canada, to replace sucrose in confections and medicines. Xylitol is not fermented by cariogenic bacteria into acids and is, therefore, non-cariogenic. If metabolized at all by other plaque bacteria, it is metabolized very slowly. Therefore, substitution of some or all of the sucrose in the normal diet with xylitol can result in a significant reduction in the incidence of caries.^{5,6} In Switzerland, many of the

confections containing xylitol as the principal sweetener are awarded special recognition for being "safe for teeth". Recognition is given if the food does not lower plaque pH below 5.7 in a standardized *in vivo* test.⁷ Canada has no such recognition program for foods.

The need for consistent terminology

More than one term has been used to define the clinical efficacy of therapeutic agents in reference to caries. A substance is 'non-cariogenic' if it is not metabolized into acids that can dissolve enamel. A substance may be 'cariostatic' if it has the effect of reducing the incidence of caries or minimizing the caries increment. An 'anti-cariogenic' substance may actually promote the reversal of an early carious lesion (no substance other than a restorative substance can be truly therapeutic once deep cavitation of the enamel has occurred).

Therapeutic claim versus health claim

'Cariostatic' or 'anti-cariogenic' claims are therapeutic claims. 'Non-cariogenic' and 'safe for teeth' are health claims. Advertisements in dental journals have made the claim that xylitol "helps fight cavities" when consumed in chewing gum. These advertisements report quantitative claims for a reduction in the incidence of dental caries. Even though chewing gum is a food product and not a conventional oral hygiene product, this type of claim, or any other non-conventional dental therapeutic claim, should be assessed on its scientific merit.

The CPR Committee will be careful to distinguish simple non-therapeutic claims for improvement in general health, such as: "... helps to promote healthy teeth" or "... does not promote dental decay" from therapeutic claims that refer to specific quantitative reductions in dental diseases. A claim such as "...

reduces dental caries by 60 per cent relative to controls'' should be evaluated as a specific therapeutic claim. A simple non-therapeutic health claim might require less rigorous scientific clinical support than a specific quantitative therapeutic claim.

The guidelines currently used by the CDA to recognize fluoride-containing products such as toothpastes cannot be applied to chewing gum or similar food products. The CPR Committee is developing guidelines which will be used to review food products which might have a therapeutic effect against dental diseases. Such guidelines could be applicable to any food with an anti-caries claim. We will distinguish effects on caries development from effects on gingival health. Any guidelines will require that the manufacturer provide sufficient scientific evidence supporting the therapeutic claims of the food product containing the active ingredient.

In this article, we are using chewing gum containing xylitol as an example of how a food product with a dental therapeutic claim would be assessed by the CPR Committee. The intent of this article is also to bring the reader up to date on the current scientific evidence supporting the therapeutic effectiveness of chewing gum containing xylitol.

Is chewing gum containing xylitol anti-cariogenic?

At the one-day Xylitol Symposium held in Ann Arbor, Michigan, a number of international experts discussed the merits of xylitol in controlling caries. In addition to its role as a non-cariogenic sucrose substitute, xylitol may also be ''cariostatic''. Some human and animal studies documenting evidence for both non-cariogenic and cariostatic mechanisms were mentioned. In most of the studies involving human subjects, dietary sucrose was substituted or supplemented with xylitol.^{5,6,8-11} In a number of studies, chewing gum containing xylitol was consumed daily by the test groups while the control groups received no gum.⁹⁻¹⁴ The chewing gum studies showed that there was a reduction of caries in the group of subjects who chewed the gum containing xylitol. Caries reduction appeared to improve with increasing xylitol consumption but a dose-dependent relationship was not easily demonstrated.

Since chewing gum is a food product and not a pharmaceutical, the xylitol chewing gum studies were carried out as field studies and not as fully double-blinded, clinical trials, which are required for testing pharmaceuticals in humans.

However, evidence from these studies and others suggest that chewing gum can help reduce the incidence of caries. To clearly establish the quantitative therapeutic effectiveness of xylitol, additional clinical trials are required. For example, the control subjects in the chewing gum studies either chewed gum with sucrose¹¹ or no chewing gum at all.¹²⁻¹⁴ Any quantitative claims of caries reduction by an agent would require a series of full clinical trials in which the control subjects chew gum lacking both xylitol and sucrose (a true vehicle control) in order to establish the effects of the chewing gum alone.

Proven demonstrations of the benefit of fluoridated toothpaste were the numerous, fully-controlled, clinical trials using valid vehicle controls (i.e. toothpaste without fluoride).¹⁵⁻¹⁸ The equivalent human trials have yet to be performed using unsweetened chewing gum as a vehicle control for anti-caries agents.

Salivary stimulation plays an important role in the cariostatic mechanism of xylitol chewing gum. Xylitol itself may provide salivary stimulation. However, chewing any kind of gum will also stimulate saliva.¹⁹ In fact, preliminary studies have shown that even chewing gum containing sucrose for 20 minutes after meals helps to neutralize the pH drop in plaque because the sucrose is cleared quickly from the gum (in the first five minutes) and it is the act of continued chewing, with its associated salivary stimulation, that appears to be beneficial.^{20,21} In one recent study, subjects who chewed sorbitol gum for 20 minutes following meals and snacks demonstrated remineralization of artificial caries-like lesions *in situ*.²² If future studies show that prolonged chewing of gum containing even sucrose can also reduce the incidence of caries, then the *duration* of chewing the gum will be a very important factor to consider.

Is there something truly special about xylitol? Xylitol has been shown to interfere with enamel demineralization.²³⁻²⁵ Furthermore, it probably also reduces the incidence of caries by limiting the numbers of *Streptococcus mutans* in plaque.^{26,27} These 'cariostatic' effects make xylitol the best presently-available sugar substitute for chewing gum, children's medications and, perhaps, a variety of other sweetened products. Some sugar alcohols are less cariogenic in foods when combined with xylitol.⁶ However, the Xylitol Symposium scientists did not feel that there was enough evidence to label xylitol a 'generic' or universally-accepted, therapeutic agent for reducing caries. A universally-accepted therapeutic agent

would have some benefit when added to food products with a *high* content of fermentable carbohydrate and would provide a margin of protection even in the presence of repeated cariogenic challenges (frequent sucrose exposure). These are two properties of xylitol that have not yet been clearly demonstrated in clinical studies.

The Future

What position should the CPR Committee take with respect to the health-related claims or the therapeutic claims of food products such as chewing gums? The CDA Board of Governors has authorized the CPR Committee to examine the possibility of establishing guidelines to apply the CDA's Seal of Recognition to food products. The Committee will have to decide whether health claims for food products can be officially recognized.

The wording of the proposed statement accompanying a 'CDA Seal of Recognition for Food Products' should first identify that the product is actually a food product and not a dental therapeutic product. It will also be necessary to identify the most effective method of consumption. For example, packaging for a product might state both the claim ''Helps fight cavities'' and additional information such as ''... shown to reduce the formation of new dental cavities if chewed three times a day for five minutes following meals or snacks''.

A number of questions about using chewing gum as a vehicle for the delivery of a therapeutic agent such as xylitol, or to promote better oral health, remain unanswered. Even if it were proved that xylitol had a true anti-cariogenic effect on its own, is the level of therapeutic effectiveness one which can be consistently obtained even when existing preventive measures (water fluoridation, regular brushing with fluoridated toothpastes) are already in place? In developing the new guidelines for food products, should new anti-caries active ingredients in food products even be compared to fluoride, which is the currently our 'gold standard' in caries reduction studies? For example, mean reduction of the DMF increment scores of 0.5 (fluoride product) and 0.1 (xylitol product) may be reasonable results for typically-designed clinical studies, but even if the 0.1 difference in the xylitol DMF increment was statistically significant, the actual benefit to the public may be marginal.

Are there any long-term effects from gum chewing? Jenkins and Edgar²⁸ found that chewing gum *qid* for just eight weeks has the effect of increasing the unstimu-

lated salivary flow rate. This may be a positive effect for caries prevention but how would the frequent use of chewing gum containing xylitol affect the other major dental disease, periodontitis? Little is known about the metabolism of xylitol by micro-organisms of the intestinal or periodontal microflora. Even though xylitol does not appear to promote significant adaptation by acidogenic dental plaque bacteria,⁵ limiting the growth of *S. mutans* could perhaps influence the growth of other pathogens in the oral cavity. Thus, focusing only on effects of xylitol on acidogenic bacteria may cause us to overlook unsuspected effects on other members of the oral microflora.

Would a CDA Seal of Recognition statement, containing recommendations on the frequency of consumption, inadvertently contribute to an increase in the incidence of TMJ dysfunction (masticatory muscle hyperactivity is known to lead to an increase in the incidence of TMJ dysfunction in susceptible patients²⁹)? CDA recognition of a chewing gum containing xylitol and other chewing gum products may directly promote the use of chewing gum as a preventive agent for home use and this might even be beneficial for those who have poor oral hygiene habits, but the CDA would not want to see oral hygiene habits deteriorate if gum chewing becomes an additional way of preventing caries.

The Consumer Products Recognition Committee emphasizes that there is a fundamental question to be considered about the appropriateness of food as a vehicle for therapeutic agents. If food were to become heavily used for therapeutic purposes the possibility of unforeseen problems has to be anticipated. Any recognition by CDA (with the approval of the appropriate government authorities) of food products for the promotion of dental health would have to be accompanied by clearly defined and clearly stated limits to such recognition.

The Consumer Products Recognition Committee will obtain answers to the above questions while investigating the possibility of establishing useful guidelines for the recognition of food products for which dental health claims are being made. We are aware of the great potential for self-medication by patients experiencing dental problems since professional help is frequently not sought in the early, relatively painless phases of dental diseases.³⁰ Those products which do not affect the dentition adversely and which have been shown clinically to actually help reduce dental disease will be given consideration for CDA recognition once a

set of appropriate guidelines has been developed by the CPR Committee and approved by the Board of Governors of the CDA. Implementation of any proposed guidelines which recognize food products with health claims or therapeutic claims will ultimately require approval of the Health Protection Branch.¹ △

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4. The candidate's application must be supported by a letter from his or her dean or other appropriate senior faculty official indicating approval of the study period and its benefits to the school of hygiene and the individual staff member.
5. Upon completion of the study period, the Canadian Fund for Dental Education will expect to receive a report on the experience, a copy of which will be made available to Warner-Lambert Canada Inc.
6. All applications will be reviewed by CFDE's Advisory Committee on Fellowship Selection. This committee will make its recommendation to the Fund's Board of Trustees, and the award winner's name will be announced shortly after the Board's annual meeting in April 1990.



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MODALITES:

1. Le candidat, ou la candidate, doit faire partie du personnel à temps plein d'une école d'hygiène dentaire et compter au moins cinq années d'expérience en enseignement universitaire ou collégiale.
2. Le projet d'étude, qui doit durer au moins un mois, doit être bien défini et organisé de façon à ce que l'école dentaire en bénéficie autant que la personne concernée. Les congrès ou activités similaires ne sont pas considérés comme étant des programmes d'étude convenant aux fins de la présente bourse.
3. Les personnes intéressées poseront leur candidature en écrivant au Fonds canadien pour l'enseignement dentaire. La lettre doit décrire en détail le projet d'étude et s'accompagner d'une notice biographique. Elle doit être présentée avant le 1^{er} mars 1990.
4. La demande doit aussi être appuyée par une lettre du doyen ou d'une autre autorité appropriée de la faculté, approuvant la période d'étude projetée et soulignant les avantages qu'en tireront l'institution et la personne concernée.
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WARNER LAMBERT

Fluorides: Mechanisms of action and recommendations for use

C. Dawes, BSc, BDS, PhD
Winnipeg

A symposium, jointly sponsored by the International Association for Dental Research and the European Organization for Caries Research, was held at Calloway Gardens, Georgia, March 21-24, 1989. Of the 150 people in attendance, 50 were invited speakers, including Drs. G.H. Bowden, C. Dawes and I.R. Hamilton from the University of Manitoba and Dr. J.A. Hargreaves from the University of Alberta. Three days were devoted to formal presentations and discussion and one-half day to development of recommendations for further research.

There was general agreement that the current decline in dental caries in westernized countries is largely due to exposure of the population to fluoride in several different forms and that although the prevalence of dental fluorosis has increased, it is largely of the very mild form which is not of clinical or cosmetic concern.

Metabolism of Fluoride

Current methods of fluoride analysis mostly involve the use of a fluoride-specific electrode, sometimes after initial diffusion, adsorption or reverse extraction of the fluoride from the biological sample. A sodium biphenyl reagent has been developed for analysis of organic fluorides, and plasma has been shown to contain such compounds, particularly in workers exposed to fluorochemicals. An exciting new technique was described for measuring fluoride concentrations in nanolitre or microlitre volumes.

The total fluoride intake is derived from fluoride in the water, diet, fluoride dentifrice, fluoride supplements and topical fluorides. The total intake from all sources is of concern in studies of dental fluorosis. Since the acute toxic dose of fluoride may be as low as 5 mg/kg, certain dental products, such as a tube of 1000 ppm F dentifrice, sixty 1 mg F



Dr. Colin Dawes

tablets or 4.6 mL of 1.23 per cent APF gel may contain the potentially toxic dose for a two-year-old child. Clearly, fluoride use by young children should be closely supervised, since it is known that children may swallow up to 30 per cent of toothpaste, even during normal usage.

Fluoride exists almost entirely as F^- above pH 5, but increasingly as hydrofluoric acid (HF) below that pH. Since HF passes biological membranes more readily than does F^- , it is particularly toxic to the gastric mucosa because of the low pH of gastric juice, and its effects on the stomach wall are similar to those of aspirin. Thus topical fluoride gels should be thoroughly expectorated to reduce the amount swallowed.

Current studies suggest that both sodium fluoride and sodium monofluorophosphate show bioavailability of close to 100 per cent on a fasting stomach, but somewhat less when taken with calcium-rich foods. The plasma level peaks 30-

60 minutes after fluoride consumption and the saliva level follows, but with a slight delay.

Recent research suggests that saliva is present in the mouth, not as a large volume washing over dental plaque, but as a very thin film (0.1 mm thick) which moves at different rates in different parts of the mouth. Thus clearance rates of both sugar and of topical fluorides may vary considerably in different regions and this may influence the site-specificity of dental caries.

Fluoride Effects on Dental Plaque

The level of fluoride in saliva is very low ($1 \mu\text{mol/L}$ or 0.019 ppm), about one-fifth of that in optimally fluoridated water. The fluoride concentration in plaque (about 1 ppm) is also much higher than that in saliva but the level of free ionic fluoride is only slightly higher than that in saliva. Thus most of the fluoride in plaque is bound in an unknown way.

Low fluoride concentrations can inhibit the enzyme enolase, which converts 2-P-glycerate to phosphoenolpyruvate (PEP) in the glycolytic pathway by which lactic acid is produced. Lack of PEP inhibits glucose uptake by the bacterial cells. Fluoride can also reduce the normal pH gradient across bacterial cell walls, which also inhibits sugar transport. Finally, fluoride inhibits formation of extracellular polysaccharides. In these multiple ways, fluoride will tend to reduce the cariogenicity of plaque bacteria. Although fluoride at normal plaque concentrations may only reduce the plaque pH drop after sugar consumption by 0.1 – 0.2 pH units, this effect may be very important, given the logarithmic nature of the pH scale and the fact that a fall of 0.1 pH unit represents a 26 per cent increase in hydrogen ion concentration.

In many ways fluoride represents an ideal agent as a public health measure

against caries (a disease of microbial etiology), since (a) it stabilizes the tissues at risk (enamel and dentine), (b) it reduces the advantage of aciduric organisms within the plaque, and (c) it does not change the normal oral flora (as would an antibiotic) but still reduces the acidogenicity of cariogenic bacteria.

Fluoride and the Caries Process

The initial caries lesion in enamel is a sub-surface lesion but the almost intact surface zone shows structural pathways, such as enlarged prism junctions, for inward movement of hydrogen ions and outward diffusion of calcium and phosphate ions. Mineral high in carbonate and magnesium is believed to be attacked first.

Our understanding of the effects of fluoride on lesion development has changed dramatically in the last few years. Fluoride was originally believed to act mainly by converting hydroxyapatite (HA) to fluorapatite (FA)

$$\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2 + 2\text{F}^- \rightleftharpoons \text{Ca}_{10}(\text{PO}_4)_6\text{F}_2 + 2\text{OH}^-$$
which is somewhat less soluble than HA. Pure FA contains nearly 38,000 ppm F, which is very much higher than F levels in enamel mineral, even in the outermost enamel layer after topical F application.

The fluoride concentration in the fluid phase of dental plaque and of the early lesion is now believed to be much more important, in that the fluoride there both retards demineralization and promotes remineralization. F present in FA would first have to dissolve to have a similar effect. The level of fluoride in plaque and in saliva, although low, is sufficient to have a strong influence on the rate of caries development. In this connection it should be stressed that fluoride does not appear to have much influence on the initiation of a caries lesion, but can greatly retard the rate of its progression. Enamel lesions show a similar prevalence in fluoridated and non-fluoridated areas, but dentinal lesions are fewer in the former. Thus it seems more important to provide low concentrations of fluoride to the fluid phase of the early lesion than to incorporate it into sound enamel. In fact, it has been very difficult to increase the F content of sound enamel. However, a technique was described by which an acid solution containing calcium, phosphate and fluoride is applied topically. This causes initial formation of dicalcium phosphate dihydrate which is then converted to FA. Since artificial caries lesions form less readily on shark enameloid (which is almost pure FA) than they do on human tooth enamel, such a conversion of HA to FA may be beneficial.

A second revolution in our understanding of the anti-cariogenic effects of F has occurred recently with regard to an appreciation of the effects of calcium fluoride (CaF_2). This substance is formed as globules on the tooth surface when enamel is exposed to concentrations of fluoride above about 100 ppm, such as occur in toothpaste.

$$\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2 + 20\text{F}^- \rightleftharpoons 10\text{CaF}_2 + 6\text{PO}_4^{3-} + 20\text{OH}^-$$
When topical fluorides were first developed, this reaction was believed to be very disadvantageous since it leads to some demineralization of the tooth, and because CaF_2 is soluble in saliva. Very recently, however, it has been shown that the CaF_2 which forms on the tooth surface becomes coated with calcium phosphate and protein (from saliva). This greatly retards the rate of CaF_2 dissolution, which may take as long as a week. This dissolution is promoted by acid. Thus the CaF_2 acts as an ideal slow-release agent for F in that it dissolves slowly and is most likely to do so when the enamel is undergoing an acid challenge.

Computer models of F clearance from the mouth suggest that if F did not react with oral structures, it would be cleared with a half-time of 2-3 minutes. However, the formation of CaF_2 and its slow dissolution greatly prolong oral F clearance after all forms of topical F application.

Fluoride and Calcified Tissue Mineralization

Excessive intake of fluoride during the post-secretory and maturational phases of enamel development is well known to cause fluorosis. The exact mechanism by which fluorosis is produced is still uncertain, but high plasma F levels may inhibit the removal of enamel matrix during the maturational phase. Fluorosed enamel contains more fluoride in its inner layers in comparison with normal enamel and it is more porous than normal and readily picks up extrinsic stains. In addition, it is more susceptible to fracture, abrasion and attrition.

Perhaps the main controversy at the symposium was between two groups who felt that they could unambiguously diagnose early signs of fluorosis across a crowded room and several other groups who felt that such a diagnosis was not always possible. In fact, data were presented showing that acid-base disturbances in animals housed under conditions which simulated high altitudes could lead to production of enamel with the appearance of fluorosis. About three different classification systems for enamel opacities are currently in use and there is a

great need for agreement on a standardized method of classifying enamel defects.

There seemed general agreement that in persons living in areas with optimally fluoridated water supplies (about 1 ppm) there had been in recent years an increased prevalence of very mild forms of dental fluorosis. However, this was not sufficient to be a clinical or cosmetic problem. The increased fluorosis is due to increased total intake of fluoride during tooth development. With a case-control method, Osuji *et al.*, of the University of Toronto, have recently shown that in a fluoridated area, increased risk of fluorosis is associated with very early use (6-24 months) of fluoridated dentifrices and, to a lesser extent, with increased duration of consumption of infant formula. Thus there may be a case for provision to children of a special dentifrice with reduced fluoride concentration. About 10 years ago, infant formula manufacturers did reduce the fluoride content of their products to avoid this problem. There was agreement that current F supplementation schedules (F drops and tablets) need review.

Rational Use of Fluorides in Prevention and Therapy

The DMFS scores in five to 17-year-olds in the U.S. have declined by 36 per cent from 1979/80 to 1987, and about 50 per cent of children are presently caries-free in the permanent dentition. The mean DMFS score in 17-year-olds is now only 7.01 in fluoridated areas and 8.59 in non-fluoridated regions, a difference of 18 per cent. No consistent trend has been found in developing countries, but diagnosis of caries has not always been standardized, making comparisons difficult.

There was agreement that prenatal fluorides have not been demonstrated to be beneficial in the reduction of caries. However, detailed studies in the Netherlands after the onset of water fluoridation, and before fluoridated dentifrices were widely available, have demonstrated significant benefits of pre-eruptive fluoride intake. Of the total caries reduction due to consumption of fluoridated water, it was estimated that pre-eruptive fluoride consumption accounted for two-thirds, one-half, and one-quarter of the reduction in pit and fissure caries, approximal caries, and smooth-surface caries, respectively. Post-eruptive fluoride becomes more important with decreasing severity of attack.

When water fluoridation was first introduced, caries reductions of about 50 per cent were reported from many

different geographical areas. In a given country it is now more difficult to detect such a large effect, not only because of the generalized use of fluoridated dentifrice, but also because of the increase in soft-drink consumption as a fraction of total water intake. Soft drinks are often manufactured in fluoridated areas but are also distributed in non-fluoridated areas. Thus a comparison of caries prevalence in Belfast, Northern Ireland (non-fluoridated) with that in Dublin, Republic of Ireland (fluoridated) was of particular interest. This revealed a 50 per cent DMFT reduction in 15-year-olds in Dublin, with water fluoridation, despite a similar use of fluoridated toothpaste in both cities. Studies from Scotland have also revealed a significant increase in caries after defluoridation. Water fluoridation also reduces root surface, as well as coronal caries.

Thus it was agreed that water fluoridation is still a very beneficial and cost-effective procedure, costing less than 50c/person/year.

Salt fluoridation has been used in Hungary and Switzerland for several years (at 250 mg F/kg) and has recently been introduced into Mexico. This costs even less (3c/person/year) and does not require local monitoring on a continuing basis, which is particularly valuable for underdeveloped countries. However, the amount of salt intake is much more variable than that of water, making it more difficult to control the amount of F ingested.

The most commonly used professionally-applied topical fluorides appear to be 1.23 per cent APF gels in trays, and F varnishes. Their use cannot be recommended as a routine procedure in fluoridated areas, because of a lack of cost-effectiveness. They should only be employed in persons at high risk of caries. Prior to their use, a prophylaxis is not required. With gels, measures should be employed to reduce the amount swallowed, by encouraging frequent expectoration for at least a minute after use. With varnishes, all the F is ultimately swallowed.

Topical fluorides could perhaps be made more effective by a reduction in pH, to promote the formation of CaF_2 on the tooth surface which, as mentioned previously, is very beneficial.

The papers given at the symposium, the discussions, and the recommendations for further research will be published as a special issue of the Journal of Dental Research in late 1989. Δ

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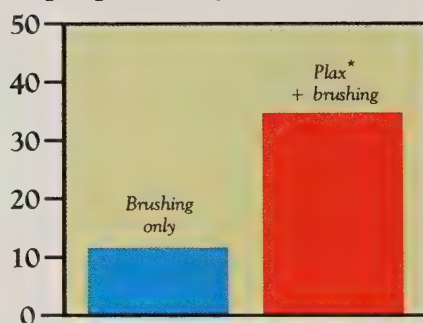
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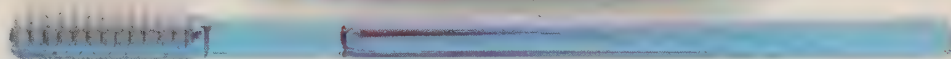
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Facial changes in children treated with the Activator appliance: A lateral cephalometric study

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ABSTRACT

Using lateral cephalometry, facial profile changes in 32 children treated with the Activator appliance were assessed and compared to profile changes in 12 untreated children of same age and with similar malocclusions. The results of this study indicated that the maxillary region of the facial profile underwent similar changes in both groups. In contrast, the mandibular changes were different, with the treated group showing more mandibular advancement than the untreated group during the period examined.

SOMMAIRE

À l'aide d'un céphalomètre latéral, on a mesuré les changements du profil facial de 32 enfants traités avec un activateur et on les a comparés à ceux de 12 enfants non traités ayant le même âge et les mêmes défauts d'occlusion. Les résultats de cette étude démontrent que la région maxillaire du profil facial a subi des changements similaires dans les deux groupes. Par contre, les changements mandibulaires étaient différents, les enfants du groupe traité accusant durant l'examen une mandibule plus avancée que ceux du groupe non traité.

Introduction

Among the commonly recognized dentofacial orthopedic appliances, the Activator was the first one introduced.¹ Although the Activator cannot replace sophisticated fixed orthodontic appliances, it has served as a valuable adjunct in the orthodontic armamentarium for interceptive and/or corrective orthodontic treatment during the mixed dentition ages.²

In the past two decades the use of the Activator as well as other dentofacial orthopedic appliances has widely increased

in North America by specialists and general practitioners alike. Yet the number of reported studies examining the effect of these appliances on the developing facial skeleton and dentition is conspicuously sparse. Consequently, the present investigation was undertaken with the following objectives:

1. To quantitatively assess the effect of the Activation appliance on facial hard and soft tissue profile during treatment.
2. To compare the effect of Activator treatment with the facial changes resulting from growth.

Methods and Materials

The sample consisted of thirty-two white children whose longitudinal cephalometric records were obtained from the undergraduate orthodontic files, Faculty of Dentistry, the University of Western Ontario. All subjects were treated without extractions and none of these patients had experienced a period of fixed appliance therapy prior to the onset of the Activator treatment. Their mean pre-treatment age was 10.7 years and mean treatment time 1.7 years as shown in **Table 1**. The control sample consisted of 12 untreated subjects randomly selected from the records of the Burlington Growth Centre, University of Toronto. Sex and age distribution was similar to treatment sample. Both samples exhibited Class II Division 1 type of malocclusions

(mandibular retrognathism).

The functional orthodontic appliance used for all treated subjects was the Activator type, as modified by Harvold.² Bite registration was taken with the mandible opened 3 mm beyond rest position and 3 mm short of maximum protrusion. The incisal edges and superior labial surfaces of the mandibular incisors were capped to prevent tipping. Tooth contact, during treatment, was maintained between the appliance and the maxillary posterior teeth while the mandibular posterior teeth were encouraged to erupt by trimming the acrylic occlusally and lingually to them.

Lateral cephalograms taken at the onset and the completion of orthodontic therapy were used. All cephalograms were taken with the teeth in centric occlusion and the lips in a relaxed position³ to standardize soft tissue posture and morphology. The magnification factor for all pre- and post-treatment head films remained constant at 9.7 per cent. To make horizontal and vertical linear measurements the X axis was established by joining cephalometric points sella and nasion. The Y axis was drawn through sella perpendicular to the X axis. After the method of Roos⁴ all horizontal measurements were made at right angles to the Y axis from eleven hard and soft tissue facial profile landmarks as illustrated in **Fig. 1**. The perpendicular distance from cephalometric point menton to the anterior

TABLE 1

Pre-treatment Age and Treatment Duration of the Treatment Sample

Sample	Mean pretreatment age in decimal years $\bar{X} \pm SD$	Mean treatment time in decimal years $\bar{X} \pm SD$
Female + Male (N = 32)	10.7 $\pm$ 1.03	1.7 $\pm$ 0.47
Female (N = 18)	10.4 $\pm$ 0.82	1.7 $\pm$ 0.48
Male (N = 14)	11.2 $\pm$ 1.12	1.6 $\pm$ 0.47

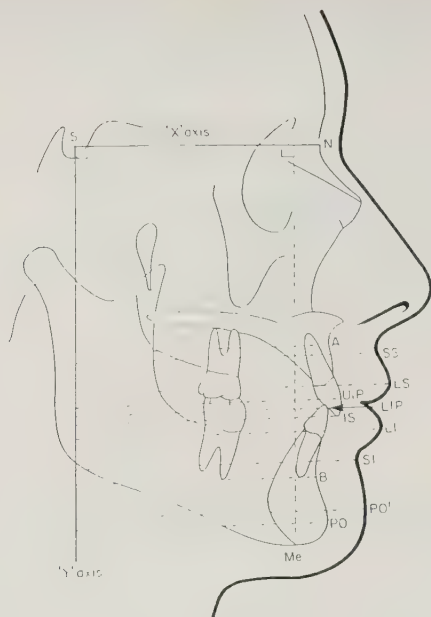


Fig. 1. Cephalometric Landmarks and Linear Measurements

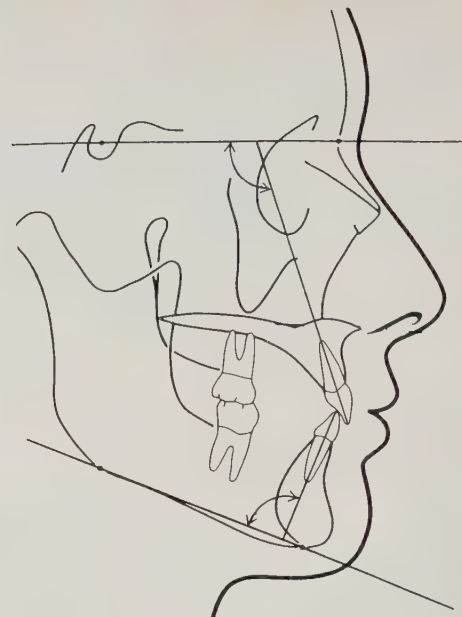


Fig. 2. Angular Measurements

cranial base was also assessed (Fig. 1). In addition to linear measurements, two angular measurements were included in this study. They involved the long axes of upper and lower incisors and the cephalometric planes, S-N and mandibular plane respectively (Fig. 2).

Cephalometric landmark definitions were defined as follows:^{5,6}

Dental

Upper incisor point (UIP) — the most anterior point on the crown of the most anterior maxillary incisor.

Incision superius (IS) — the incisal tip of the maxillary incisor.

Lower incisor point (LIP) — the most anterior point on the crown of the most anterior mandibular incisor.

Soft Tissue

Sulcus superius (SS) — the most posterior point on the concavity of the upper lip.

Labrale superius (LS) — the most anterior point on the convexity of the upper lip.

Labrale inferius (LI) — the most anterior point on the convexity of the lower lip.

Sulcus inferius (SI) — the most posterior point on the concavity of the lower lip.

Soft tissue pogonion (Po') — the most anterior point on the soft-tissue chin.

Hard Tissue

A point (A) — the most posterior point on the anterior maxillary border.

B point (B) — the most posterior point on the anterior mandibular border.

TABLE 2

Mean Difference and Significance Between Pre-treatment and Post-treatment Measurements of Children Treated with the Activator

Linear Measurements (N = 32)	Pre-Treatment $X_1 \pm SD$		Post-Treatment $X_2 \pm SD$		Difference $X_1 - X_2$	Significance
Maxillary (mm)						
A	63.30	4.53	64.80	5.10	1.50	5.36***
SS	76.30	4.63	78.44	5.65	2.14	5.04***
UIP	67.24	5.52	67.88	6.20	0.64	1.36
LS	78.13	5.71	79.80	6.05	1.67	3.91***
IS	65.36	5.85	65.50	6.76	0.14	0.88
Mandibular (mm)						
LIP	59.38	5.70	63.09	6.20	3.71	9.55***
LI	69.91	6.75	74.18	6.49	4.27	9.75***
SI	59.47	6.86	64.77	7.69	5.30	5.98***
B	50.32	7.02	53.59	7.39	3.27	3.27**
PO	49.27	7.09	52.78	8.20	3.51	8.38***
PO'	60.38	7.25	65.01	8.64	4.63	9.60***
Me-SN	108.47	6.52	112.41	5.85	3.94	3.84***
Angular (°)						
Max.Inc.-SN Plane	107.30	6.53	101.67	7.21	-5.63	8.16***
Mand.Inc.-Mand. Plane	97.07	6.90	98.08	6.17	1.01	0.46

* significant at .05 level

** significant at .01 level

*** significant at .001 level

* significant at .05 level
 ** significant at .01 level
 *** significant at .001 level

Pogonion (Po) — the most anterior point on the contour of the chin.

Menton (Me) — the lower most point on the mandibular symphysis.

Error Analysis

The method used to assess the measurement error involved in this study has been previously described.^{5,7} The error

analysis data indicated that none of the linear measurements had an error which exceeded 0.2 mm.

Results

Table 2 represents the cephalometric changes observed between the pre- and post-treatment cephalometric records of the treatment sample.

It was found that all mandibular measurements advanced significantly during treatment. Mandibular points B and Pogonion moved anteriorly 3.3 mm and 3.5 mm respectively while, similar changes were noted for the corresponding soft tissue points SI and PO. The maxilla, represented by cephalometric point A, advanced 1.5 mm as did the maxillary or superior sulcus (point SS).

Contrasting changes were found between the linear measurements of maxillary and mandibular incisors. The lower incisors (LIP) advanced 3.7 mm causing the lower lip (LI) to move similarly in the same direction, while the maxillary incisor points (VIP and IS) did not display significant advancement during treatment. In fact these two maxillary incisor measurements were the only linear measurements that did not change significantly during the Activator therapy.

Contrasting changes were also found between the incisal angular measurements. During treatment, the axial inclination of the mandibular incisors changed slightly, while significant change was observed in the angular relationship between the maxillary incisors and the anterior cranial base.

Table 3 shows the comparison of cephalometric changes assessed in the treatment and the control samples during the same time period. Student t-tests revealed that the maxillary changes observed between the two groups differed very little and the difference for any of the maxillary parameters was not statistically significant. The only exception was the angular measurement of the maxillary incisors.

However, marked differences were noted in the mandibular changes of each sample. With the exception of the facial height (point Me) the rest of hard and soft tissue mandibular points of the treated sample advanced significantly more than the corresponding points of the control sample during the same time period. For some of these points (POG, B and SI) the advancement ratio was two to one in favor of the treatment group.

Discussion

The cephalometric changes assessed in the children treated with the Activator

TABLE 3

Comparison of Facial Changes Between Treatment and Control Samples

Landmarks	Treatment (mm) (N = 32)	Growth (mm) (N = 12)	Difference (mm) G vs T
Maxillary (mm)			
A	1.50	1.34	0.16
SS	2.14	2.62	-0.48
UIP	0.64	1.42	-0.78
LS	1.67	2.35	-0.68
IS	0.14	1.18	-1.04
Mandibular (mm)			
LIP	3.71	2.25	1.46 **
LI	4.27	3.15	1.12 *
SI	5.30	2.29	3.01 **
B	3.27	1.21	2.06 **
PO	3.51	1.80	1.71 **
PO'	4.63	3.44	1.19 *
Me-SN	3.94	4.78	-0.84
Angular (°)			
Max.Inc.-SN Plane	-5.63	-0.40	-5.23***
Mand.Inc.-Mand. Plane	1.01	0.60	0.41
* significant at 0.05 level			
** significant at 0.01 level			
*** significant at 0.001 level			

reflect the combined effect of treatment and growth on their facial profile. To differentiate between treatment and growth effect we compared the changes of the treatment sample to those of the control sample. The control subjects did not have orthodontic treatment and therefore their facial changes reflect the effect of growth during the same chronological period. The difference in the maxillary changes (point A) between the two samples was very small and not statistically significant (**Table 3**). Thus, the effect of the Activator on the maxillary growth appears to be neutral. This observation supports earlier reported data,⁵ although it differs with other clinical studies^{8,9,10,11} which reported that the Activator applies restrictive influence on maxillary growth during treatment. However, restrictive effect of the Activator appliance was observed on the maxillary incisors (points VIP and IS) as these teeth advanced less in the treatment group than in the control sample. More noted was the Activator effect on the axial inclination of the maxillary incisors. During the course of treatment, the angular relationship of these teeth to the anterior cranial base was decreased significantly. This was expected as the labial bow of the Activator tends to cause a lingual tipping of the maxillary incisors.^{11,12}

The maxillary lip in the treatment group responded partially to the incisal lingual tipping since there is a fairly close inter-relationship between these tissues.¹³⁻¹⁵

Mandibular retrognathism is a major cause of Class II type malocclusion¹⁶ and any treatment capable of facilitating mandibular growth should be highly desirable. Past clinical studies involving children treated with the Activator appliance reported that functional orthodontic therapy can increase mandibular length.^{9,17-20} However, other studies suggested that the length of the mandible is unaltered by functional orthodontics and the only changes that took place were limited to dentoalveolar remodeling.^{8,12,21,22} The results of this clinical investigation indicated that during the course of Activator treatment, the mandible (point Po) in the treatment sample moved anteriorly almost twice as much as it did in the untreated subjects. Similar ratios were found for the remaining hard and soft tissue mandibular parameters between the two samples, with the exception of the facial height (point Me). The lower incisor (point LIP), mandibular alveolar process (point B) and the mandibular lip (points LI and SI) advanced significantly more in the treated than in the control sample, supporting previously reported data.⁵

Based on the above data, the mandibular translation resulting from orthodontic treatment with the Activator appliance appears to be larger than the one expected in untreated children, although its post treatment stability has not been established. However, before any solid conclusions are drawn regarding the Activator effect on mandibular and maxillary growth, additional studies should examine not only the effect of functional orthodontic appliances during treatment, but most importantly, the long term effect of these appliances on the developing human face. Δ

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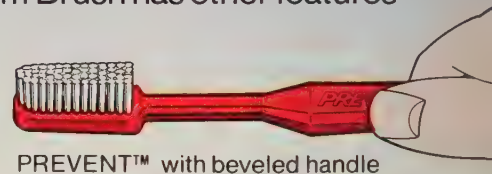


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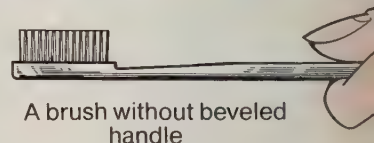
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Orthodontic treatment of impacted first permanent maxillary molars

Antonios H. Mamandras, DDS, MSc
London, Ont.

INTRODUCTION

The transition from the primary to the permanent dentition takes place around the age of six years with the eruption of the first permanent molars, followed soon thereafter by the mandibular central incisors. These teeth usually erupt at the same time and it is within normal variation for the mandibular central incisors to slightly precede the first permanent molars or vice versa. Failure of a permanent tooth to erupt will create a dental condition known as impaction. It is mostly a localized problem which may have idiopathic origin¹ or could be related to (a) an abnormal eruptive path (ectopic eruption), (b) poorly positioned bud and (c) a traumatic condition that leads to ankylosis (e.g., maxillary incisors). A generalized impaction problem implies an abnormality in the eruption mechanism.² The impaction problem in the case to be reported is a localized one and its origin appears to be idiopathic, since there is no history of oral-facial trauma and the position of the tooth is not ectopic.

SOMMAIRE

Le passage de la première à la deuxième denture a lieu vers l'âge de six ans avec l'éruption des premières molaires permanentes suivie peu après par celle des incisives centrales de la mandibule. Ces dents font ordinairement leur éruption en même temps, et il se peut, ce qui reste normal, que les incisives centrales mandibulaires précèdent légèrement les premières molaires permanentes ou vice versa. Lorsqu'une dent permanente ne fait pas éruption, on dit qu'elle est enclavée. La plupart du temps, c'est un problème localisé qui peut être d'origine idiopathique ou être lié (a) à une voie d'éruption anormale (éruption ectopique), (b) à un bourgeon dentaire mal situé, (c) à une affection traumatique causant une ankylose (par exemple dans les incisives maxillaires). Un problème d'enclavement généralisé indique une anomalie dans le mécanisme d'éruption. Dans le cas rapporté ici, le problème d'enclavement est localisé et

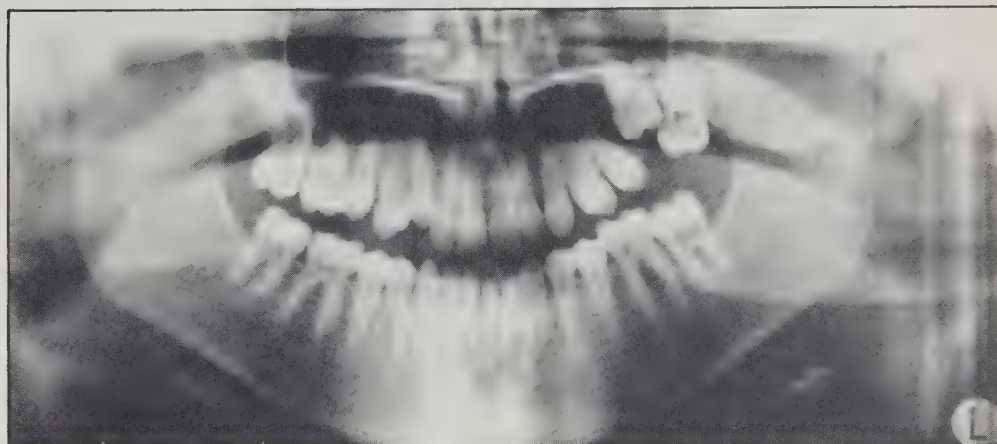


Fig. 1a. Pre-treatment panoramic radiograph.

son origine semble être de nature idiopathique, puisqu'il n'y a pas eu de trauma bucco-faciale et que la position de la dent n'est pas ectopique.

Case Review

A 13½ year-old-male patient with an impacted first left maxillary molar came to the undergraduate orthodontic clinic of the University of Western Ontario for orthodontic treatment (Figs. 1,a,b,c,d). Intra-oral examination revealed that as a result of the impaction, the second left maxillary molar had drifted mesially. Similarly, the first and second premolars of the second quadrant had tipped distally and there was a 4.5 mm space between the second premolar and the second molar. With the exception of the posterior region of the second quadrant, both maxillary dental arches were fairly aligned and well related to each other. A small (1 mm) midline discrepancy was also present.

Cephalometrically, the patient had an orthognathic skeletal relationship and a straight soft tissue profile well related to the dentition. Radiographs indicated that the impacted molar was in a good position antero-posteriorly with some degree of bucco-lingual rotation. Both mandibular third molars and the third left maxillary molar were congenitally missing.

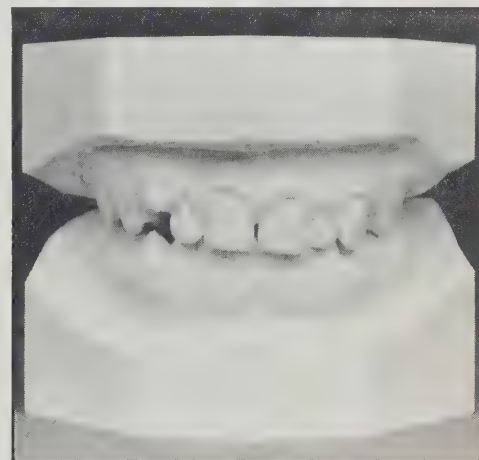


Fig. 1b. Frontal view of pre-treatment study casts.

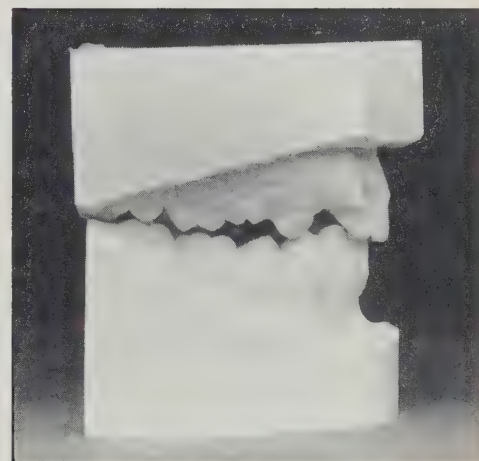


Fig. 1c. Right side view of the pre-treatment study casts.

Treatment

Prior to pulling down the impacted first maxillary molar, adequate space had to be regained in the second quadrant. Distalization of the second maxillary molar could have been achieved by using removable orthodontic appliances, extra-oral forces or a combination of the two.³

Since the premolars had tipped distally and required uprighting, a removable maxillary appliance (Fig. 2) was used to carry out both tasks. Applying the principle of reciprocal anchorage,⁴ the second molar and the premolars were moved by finger springs into their respective regions. After three months of treatment, adequate space was regained for the impacted first molar. Following a surgical exposure of the occlusal surface of the molar crown, a small loop was bonded on the distal palatal cusp. The loop was made from .014 stainless steel orthodontic archwire and had a diameter of 1.5 mm.



Fig. 1d: Left side view of the pre-treatment study casts.

Subsequently, the removable appliance was modified by the addition of a power arm which was used to pull down the impacted molar (Figs. 3A & B). The patient was instructed to wear the appliance full time and was trained on how to engage and disengage the power arm of

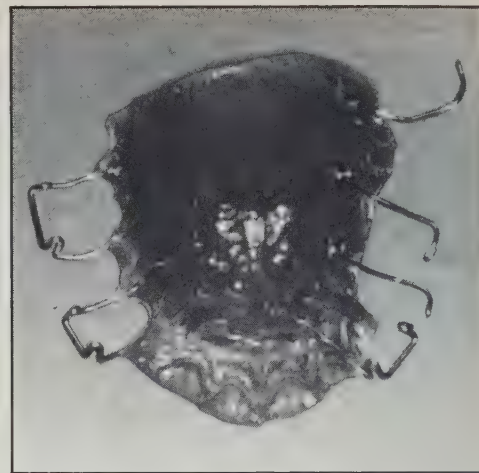


Fig. 2: Maxillary removable appliance used to re-open the space for the impacted first left molar.

the appliance with the bonded loop. The movement of the impacted molar was very slow during the first six months of traction, progressing faster thereafter. After 12 months of treatment, the molar crown was halfway erupted (Fig. 4) and at this stage the loop was removed and

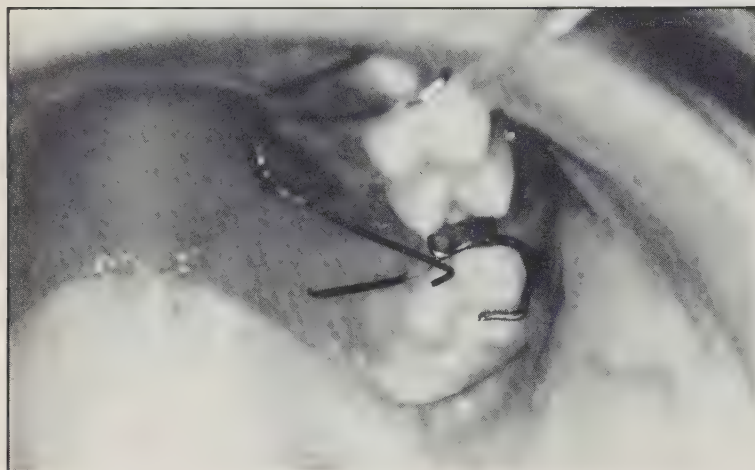


Fig. 3a: Palatal view of the power arm before activation.



Fig. 3b: Palatal view of the power arm position after activation.

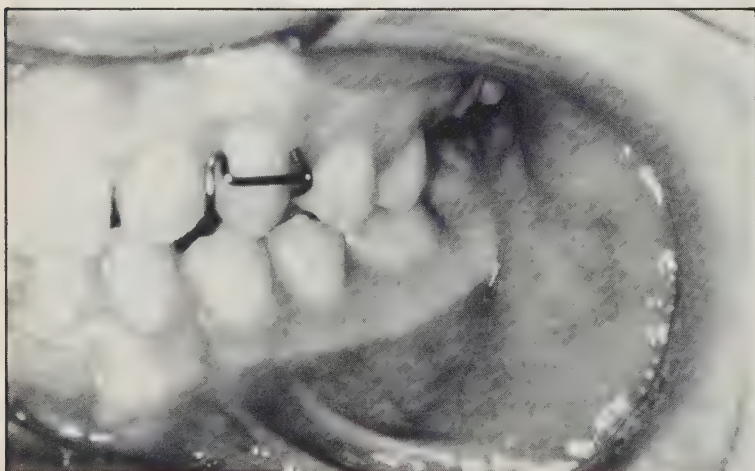


Fig. 4: The crown of the impacted first maxillary molar partially erupted.

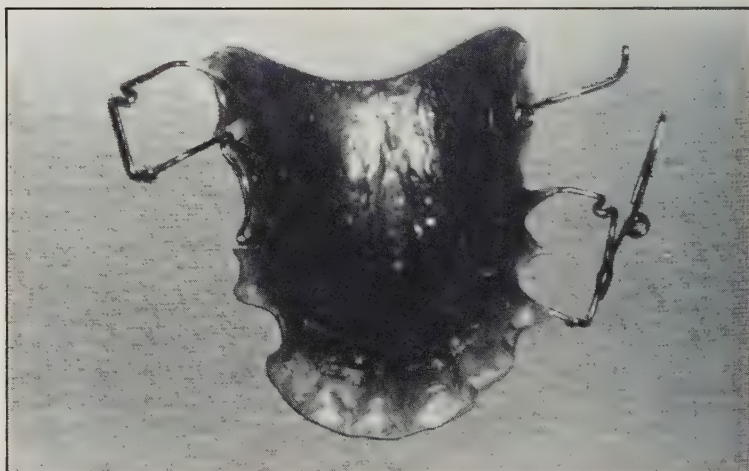


Fig. 5: The second maxillary removable appliance with the labial spring attached to the premolar Adams clasp.

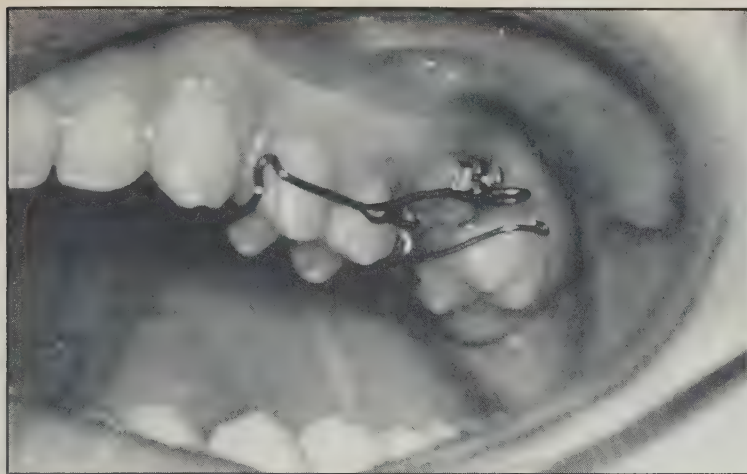


Fig. 6a: The labial spring position before activation.

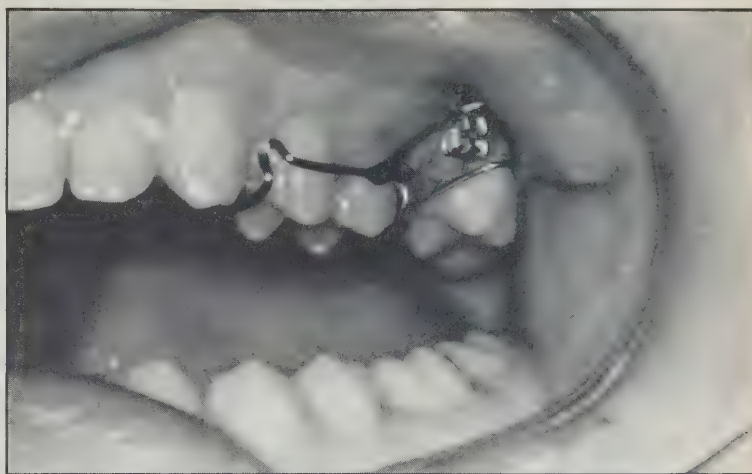


Fig. 6b: The labial spring position after activation.

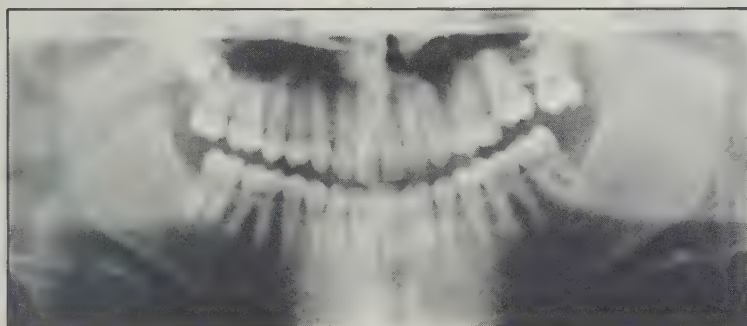


Fig. 7a: Post-treatment panoramic radiograph.

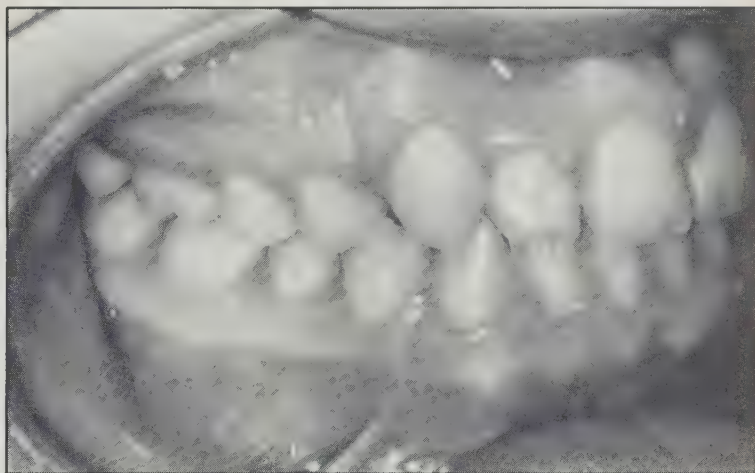


Fig. 7b: Right side view of the occlusion at the end of treatment.

an orthodontic bracket was bonded on the buccal surface of the crown. A new maxillary removable appliance was made with a labial finger spring (Fig. 5) to continue the function of the power arm component of the first appliance. The labial finger spring was attached to the bridge of the premolar Adams Clasp and was activated to move the first molar occlusally and also in a lingual direction (Figs. 6A and B). In addition, an occlusal stop for the second left maxillary molar was used to prevent over-eruption of this tooth. The impacted molar was fully into occlusion (Figs. 7a, b, and c) during the fourteenth month of treatment, at which time the labial spring was eliminated. The removable appliance is presently used as a retainer. After six months of retention, a fixed retainer connecting the two molars will be bonded to prevent over-eruption of the second left maxillary molar. This is necessary since the third left mandibular molar is not there to provide occlusal support.

Discussion

Although statistics relative to first maxil-

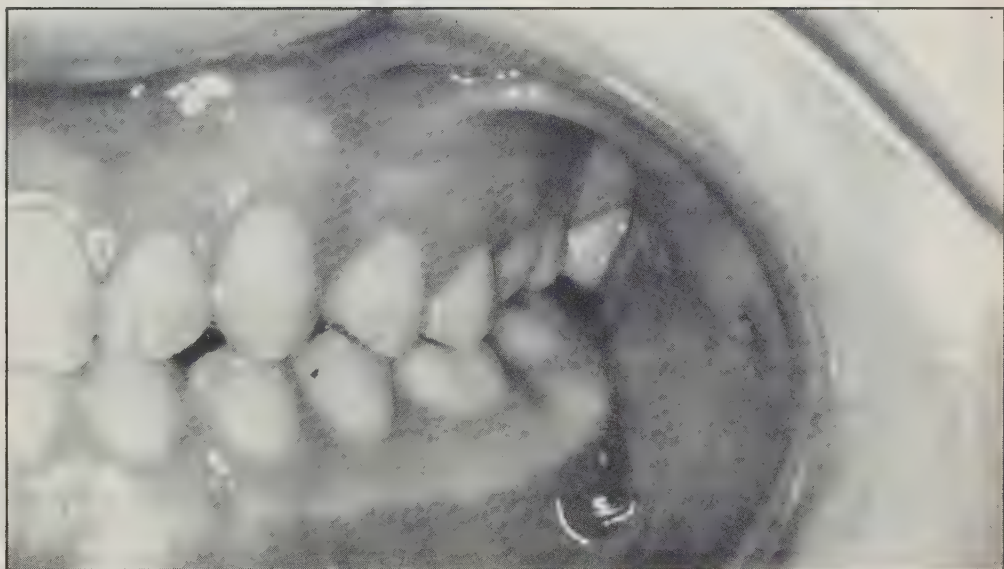


Fig. 7c: Left side view of the occlusion at the end of treatment.

lary molar impaction are not available in the literature, Young⁵ reported that 3 per cent to 4 per cent of the population will have ectopically erupting first permanent molars. From these teeth, the maxillary first molars are most likely to be affected

by abnormal eruptive paths.^{5,6} The frequency of ectopic maxillary molar eruption has no sex or race variation,⁷ however there is a higher frequency of this type of problem in siblings⁸ and also children with a cleft lip and palate.⁹

Even though the majority of ectopically erupting maxillary molars will avoid impaction by self-correcting their abnormal eruptive paths,⁵ occasionally a few will be impacted.¹ Orthodontic treatment for these teeth can be carried out with either removable or fixed appliances, depending upon the severity of the problem.

The two maxillary appliances used in the treatment of the reported case were of the removable type. The selection of these orthodontic appliances was primarily based on the fact that the maxillary and mandibular dental arches were well aligned and harmoniously related to each other, with the exception, of course, of the local anomaly in the second quadrant. In addition, we felt that we were dealing with a well motivated patient who was eager to cooperate fully with the treatment proposed. If the impaction of the first maxillary molar was part of a larger dental or skeleto-dental problem requiring comprehensive orthodontic treatment, then fixed appliances should have been used. Fixed orthodontic mechanotherapy is also necessary in those cases where patient cooperation problems are foreseen or where the patient's motor coordination is not suitable for treatment with removable orthodontic appliances.

Furthermore, regardless of the type of appliances to be used in the treatment of an impacted first maxillary molar or in general of any impacted tooth, there are certain considerations that should be taken into account during the treatment planning phase. These should include:

- (1) Before attempting to pull the impacted molar into occlusion, adequate space should be secured in the respective dental arch.
- (2) If buccal surgical exposure is necessary, flaps should be reflected so that the tooth is moved through keratinized tissue and not through alveolar mucosa.²
- (3) Depending on the severity of the impaction, it may sometimes be more practical to extract the impacted molar and close the space by orthodontic and/or prosthetic means. In very difficult cases this is a more prudent approach than attempting orthodontic heroics to move the impacted tooth.

Summary

The etiology and treatment of impacted first maxillary molars has been reported. Appliance selection criteria, as well as treatment planning considerations have also been discussed. Although impacted first maxillary molars can be treated with either fixed or removable orthodontic

appliances, the selection of the appliance should be based on the overall severity of the malocclusion. Δ

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Diagnostic différentiel des masses cervicales¹

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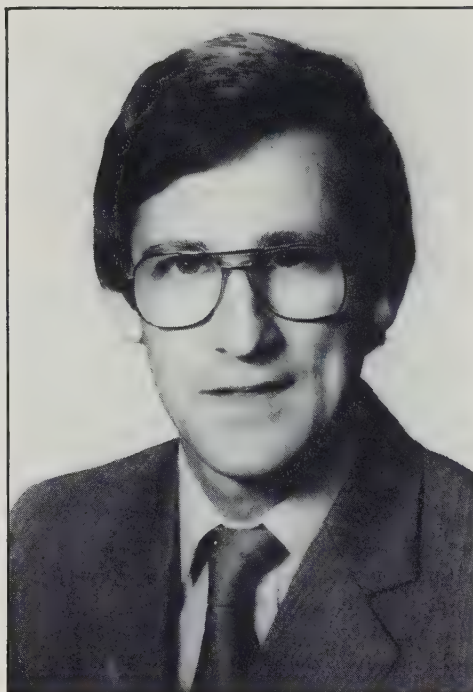
RÉSUMÉ

Cet article sur le diagnostic différentiel des masses cervicales constitue une revue des principales causes de masses décelables à l'examen extra-oral. Certaines de ces masses présentent un intérêt particulier pour le dentiste; il s'agit notamment des cellulites d'origine dentaire, des pathologies salivaires et des adénopathies cervicales. Point n'est besoin, par ailleurs, d'insister sur l'importance considérable que jouent les adénopathies cervicales dans le diagnostic des leucémies, des lymphomes et des désordres reliés au virus de l'immunodéficience humaine. La première partie de l'exposé sera principalement consacrée au diagnostic différentiel des adénopathies cervicales alors que le sujet des masses non-ganglionnaires fera l'objet d'une publication ultérieure.

ABSTRACT

This article on the differential diagnosis of cervical masses is a review of the main causes of the masses that an extra-oral exam can detect. Some of these masses are of particular interest to the dentist; they are notably cellulitis of dental origin, salivary pathologies and cervical adenopathies. There is no need to stress the major importance of the role played by the cervical adenopathies in the diagnosis of leukaemias, lymphomas and disorders linked to the HIV virus. The first part of this article focuses mainly on the differential diagnosis of cervical adenopathies, while the non-ganglionic masses will be discussed in another article.

L'examen extra-oral représente une partie importante de l'examen clinique du patient. Il permet en effet une



évaluation approfondie du système masticateur, des glandes salivaires majeures et des aires ganglionnaires régionales. De plus, il fournit une appréciation de l'état général du patient, et à ce titre, l'un de ses principaux objectifs concerne le dépistage des masses cervicales.

L'éventail de ces masses est très large, regroupant différents processus de nature réactionnelle, inflammatoire, infectieuse, kystique ou tumorale. Le diagnostic final repose sur une démarche clinique rigoureuse basée sur une anamnèse approfondie, un examen clinique soigné et un bilan radiologique et biologique approprié. Dans le but de faciliter l'élaboration du diagnostic différentiel, les masses cervicales peuvent être avantageusement regroupées en deux catégories distinctes, soit les masses cervicales isolées et les masses cervicales multiples. Nous nous attarderons, pendant la première partie

de l'exposé, sur le diagnostic différentiel des masses cervicales multiples qui sont le plus souvent, sur le plan étiologique, d'origine ganglionnaire.

Si l'on fait exception de certains kystes et tumeurs cutanées (ex: kystes sébacés, neurofibromes...), la découverte de plusieurs masses cervicales à l'examen clinique traduit en effet la présence d'un processus de nature ganglionnaire; le diagnostic différentiel devient alors celui des adénopathies cervicales. Pour bien maîtriser ce diagnostic différentiel, il est nécessaire d'effectuer un bref rappel sur la localisation et les zones de drainage des différents groupes ganglionnaires de la tête et du cou.

1. Drainage ganglionnaire cervical

La région de la tête et du cou constitue le territoire anatomique le plus complexe de l'organisme et le drainage ganglionnaire cervical ne fait pas exception à cette règle. On y retrouve en effet différents groupes ganglionnaires superficiels qui assurent l'ensemble du drainage lymphatique des structures supra-claviculaires (cf. **figure 1**). Ces groupes sont intimement reliés, mais, pour fin de classification, sont généralement divisés en dix catégories.^{1,2,3}

Ganglions buccaux

Situés au niveau de l'aspect latéral du visage, ces ganglions drainent la région de la joue et de l'aile du nez.

Ganglions mandibulaires

Situés près du bord inférieur de la mandibule, ces ganglions drainent les mêmes structures que les ganglions buccaux.

Ganglions sous-mentonniers

Situés dans la région sous-mentonnaire, ces ganglions drainent la partie antérieure

du plancher de la bouche, l'apex de la langue, et la partie centrale de la lèvre inférieure.

Ganglions sous-maxillaires

Situés dans la fosse sous-maxillaire, ces ganglions drainent la partie latérale de la lèvre inférieure, la lèvre supérieure, la partie antéro-latérale de la langue, la partie latérale du plancher de la bouche, le palais, la muqueuse jugale, la joue, les dents, la partie latérale du nez et la portion médiane de la paupière inférieure.

Ganglions parotidiens

Situés derrière la région pré-auriculaire, ces ganglions drainent le front, la région temporale, la paupière supérieure, la portion latérale de la paupière inférieure, l'oreille externe et la parotide.

Ganglions auriculaires postérieurs

Situés derrière l'oreille, ces ganglions drainent le cuir chevelu de la région pariéto-occipitale.

Ganglions occipitaux

Situés dans la région occipitale, ces ganglions drainent la partie postérieure du cuir chevelu.

Ganglions cervicaux superficiels

Situés au niveau du tiers supérieur du sterno-cléido-mastoïdien, ces ganglions reçoivent le drainage des ganglions parotidiens.

Ganglions cervicaux profonds

Les ganglions cervicaux profonds sont situés dans le triangle antérieur et le triangle postérieur. Les ganglions du triangle postérieur suivent le trajet du nerf spinal accessoire et drainent la région postéro-latérale du cou et le naso-pharynx. Les ganglions du triangle antérieur suivent le fourreau carotidien et drainent le nez, les sinus, une partie du palais mou, la base de la langue, l'oropharynx, le larynx, l'oesophage et la thyroïde.

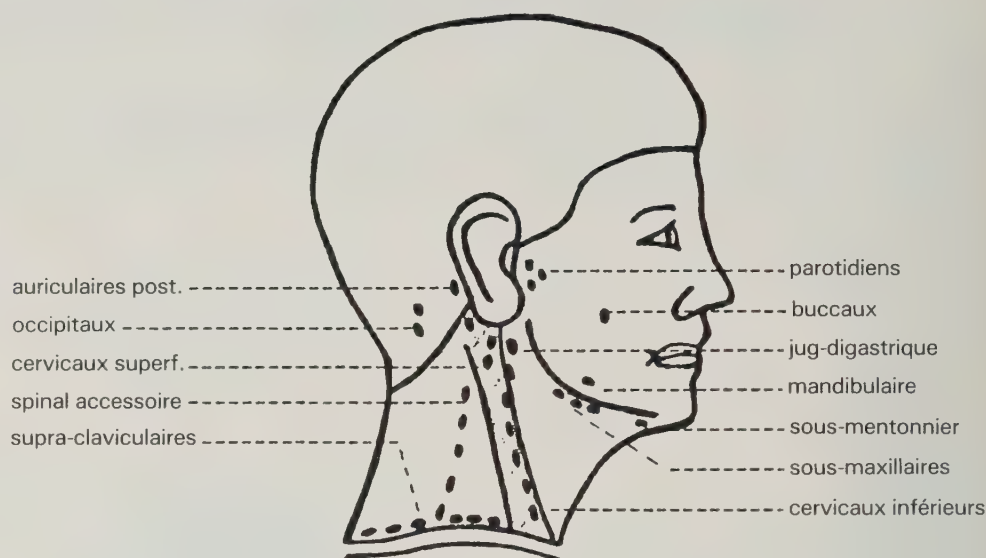
Ils se subdivisent en trois classes, les ganglions cervicaux supérieurs (jugulo-digastriques), les ganglions cervicaux moyens et les ganglions cervicaux inférieurs.

Ganglions supra-claviculaires

Situé dans le creux sus-claviculaire, ce groupe draine les ganglions cervicaux profonds, les diverses structures thoraciques et abdominales, le sein et le membre supérieur. Ces ganglions constituent le dernier relais lymphatique avant la circulation générale.

FIGURE 1

Drainage lymphatique de la tête et du cou



Drainage lymphatique de la tête et du cou.

TABLEAU 1

Diagnostic différentiel des adénopathies cervicales

- adénopathies cicatricielles
- adénopathies associées aux infections orales bactériennes
- adénopathies associées aux infections virales
- adénopathies associées aux lymphomes
- adénopathies associées à la leucémie
- adénopathies associées à la mononucléose
- adénopathies associées au virus de l'immunodéficience humaine
- adénopathies métastatiques
- adénopathies syphilitiques
- autres formes rares d'adénopathies (griffures de chat, Kawasaki. . .)

II Diagnostic différentiel des adénopathies cervicales

Le diagnostic différentiel des adénopathies cervicales est complexe (cf. **tableau 1**) et fait appel à une démarche clinique précise et standardisée où l'anamnèse et l'examen clinique revêtent une importance fondamentale.

L'anamnèse doit ainsi s'attarder à préciser la durée et l'évolution des lésions et doit, par dessus tout, rechercher la présence de symptômes constitutionnels, dans les cas particulièrement de polyadénopathies cervicales. Ces symptômes, du type asthénie, anorexie, perte de poids, fièvre et sudations nocturnes, sont souvent associés à la présence de désordres importants comme la leucémie, les lymphomes, les extensions métastatiques et l'infection par le virus de l'immuno-

déficience humaine; ils peuvent toutefois accompagner des conditions moins sévères comme la mononucléose et certaines infections virales. L'anamnèse doit aussi démontrer la présence de certains facteurs de risque lorsqu'une exposition au virus de l'immunodéficience humaine est soupçonnée (homosexualité, utilisation de drogues intra-veineuses, transfusions sanguines, relation sexuelle avec partenaire à risque ou infecté). Les notions de tabagisme et d'éthylisme peuvent par ailleurs suggérer la possibilité d'une atteinte métastatique.

L'examen clinique, quant à lui, doit évaluer le nombre et le volume des lésions et déterminer s'il s'agit de masses uni ou bilatérales. Il doit aussi vérifier la consistance des adénopathies et rechercher la présence de douleur à la palpation. L'induration, rappelons-le, est un signe

fortement suggestif d'une atteinte métastatique, alors que la douleur à la palpation traduit généralement la présence d'un processus infectieux ou inflammatoire. L'examen clinique doit enfin préciser si les masses sont libres ou fusionnées, mobilisables ou fixées aux structures sous-jacentes, suggérant le cas échéant un envahissement métastatique. La synthèse des données recueillies permet ainsi l'élaboration du diagnostic différentiel. Il est à noter que certaines structures anatomiques normales peuvent être palpées lors de l'examen du cou, notamment le sinus carotidien et l'apophyse transverse de l'atlas, et qu'elles ne doivent pas être confondues avec des processus pathologiques.

Adénopathies cicatricielles

Les adénopathies cicatricielles représentent le type d'adénopathies le plus souvent observé à l'examen clinique. Ces adénopathies sont typiquement asymptomatiques, fermes à la palpation, simples ou multiples, parfois bilatérales comme chez l'enfant, et facilement mobilisables.^{4,5} L'absence de changement récent permet de les distinguer des formes plus sérieuses d'adénopathies.

Adénopathies secondaires aux infections oro-dentaires

Les adénopathies secondaires aux infections orales se caractérisent par leur rapidité d'apparition et leur sensibilité à la palpation. Elles traduisent l'extension de l'infection au niveau du tissu ganglionnaire (adénite); elles peuvent être chaudes à la palpation et peuvent même s'accompagner d'un érythème visible à l'inspection. Ces adénopathies sont habituellement régionales et correspondent à la zone de drainage du territoire infecté.^{4,5,6}

Adénopathies secondaires aux infections virales

Les adénopathies secondaires aux infections virales de l'enfance telles la gingivostomatite herpétique primaire, la rubéole, la rougeole et la varicelle sont communes et se présentent sous forme de polyadénopathies bilatérales et douloureuses à la palpation. Le patient est généralement fébrile et les adénopathies évoluent rapidement pour diminuer substantiellement de volume après la fin de la virémie.⁷

Adénopathies associées aux lymphomes

Les adénopathies lymphomateuses, hodgkiniennes ou non-hodgkiniennes, sont très typiques et se caractérisent par la présence de masses asymptomatiques, fermes et déplaçables, généralement observées bilatéralement. Ces masses s'accompagnent très souvent d'une atteinte de l'état général et présentent, en



Figure 2

cours d'évolution, une nette tendance à la confluence avec l'extension de proche en proche.^{8,9,10}

Adénopathies leucémiques

Les adénopathies leucémiques sont très proches cliniquement des adénopathies lymphomateuses. Toutes deux se caractérisent par la présence de masses fermes, asymptomatiques et bilatérales qui

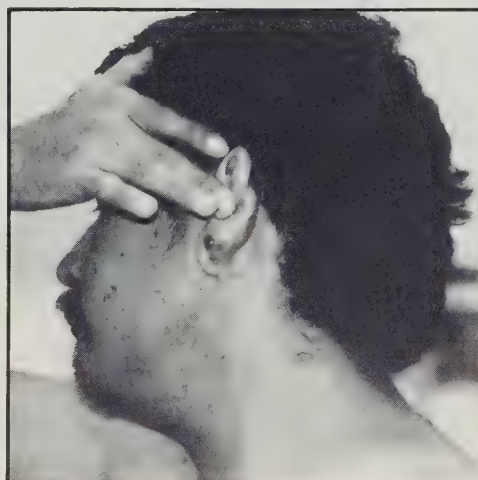


Figure 3

s'accompagnent d'une atteinte importante de l'état général particulièrement démontrable dans les leucémies aiguës.^{8,11} Toutefois, la notion d'infection ou de complications hémorragiques, comme certaines manifestations orales d'ailleurs, suggère davantage la leucémie. Le diagnostic repose sur les importantes anomalies constatées à l'hémogramme, soit l'hyperleucocytose maligne, l'anémie et la thrombocytopénie.

Adénopathies associées à la mononucléose

Les adénopathies mononucléosiques sont fermes, déplaçables et bilatérales. Elles peuvent donc ainsi mimer les adénopathies leucémiques et lymphomateuses, d'autant plus qu'elles s'accompagnent généralement de symptômes constitutionnels importants. (cf. figure 2). Elles sont cependant sensibles à la palpation et se compliquent invariablement d'une

pharyngo-amygdalite qui doit en évoquer sérieusement le diagnostic.⁷ Des adénopathies similaires s'observent dans la toxoplasmose et l'infection par le cytomégalo-virus. Elles induisent les mêmes changements hématologiques que la mononucléose et sont désignées de syndrome mononucléosique.^{12,13}

Adénopathies associées au virus de l'immunodéficience humaine

Les adénopathies associées au virus de l'immunodéficience humaine peuvent mimer en tout point les adénopathies lymphomateuses ou leucémiques. Elles sont typiquement bilatérales, fermes et asymptomatiques, et s'accompagnent d'une atteinte importante de l'état général. (cf. figure 3). Elles doivent donc être considérées de routine dans le diagnostic différentiel des adénopathies cervicales, particulièrement en présence des facteurs de risque initialement mentionnés. Ces adénopathies s'observent lors des trois stades de l'exposition au virus de l'immunodéficience humaine, soit le Syndrome des lymphadénopathies persistantes généralisées (P.G.L.), le Para-Sida (A.R.C.) et le Sida.¹⁴ Leur nature est variée et elles peuvent correspondre histologiquement à la présence d'hyperplasies réactionnelles, de lymphomes, d'extensions métastatiques ou d'infiltrations par le sarcome de Kaposi.¹⁵

Adénopathies métastatiques

D'une façon caractéristique, les adénopathies métastatiques sont indurées, unilatérales et notées principalement chez l'adulte d'âge avancé.^{1,16} (cf. fig. 4). Elles peuvent être toutefois bilatérales, lorsqu'elles originent d'une tumeur située sur la ligne médiane. Initialement asymptomatiques, elles deviennent très douloureuses lorsqu'elles envahissent les plexus nerveux adjacents; elles sont alors typiquement fusionnées et fixées aux structures sous-jacentes.^{17,18,19} Il est à noter

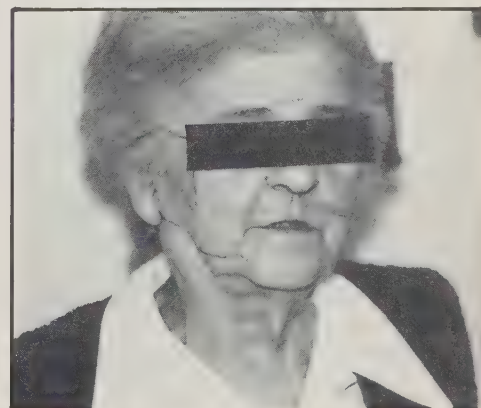


Figure 4

que les adénopathies métastatiques surviennent parfois de façon isolée dans la phase initiale de l'essaimage lymphatique

et qu'en principe donc, toute adénopathie isolée suspecte de l'adulte d'âge avancé doit être considérée comme métastatique jusqu'à preuve du contraire.

Adénopathies syphilitiques

Les adénopathies associées à la syphilis sont variables. Celles qui sont observées dans la syphilis primaire sont fermes, asymptomatiques et localisées, correspondant à la zone de drainage du chancre intra-oral. Les adénopathies de la syphilis secondaire sont cependant bilatérales, généralisées et s'accompagnent d'une atteinte de l'état général, d'une perte de cheveux et d'un rash cutanéomuqueux caractéristique.⁷

Formes rares d'adénopathies

Certaines formes rares d'adénopathies peuvent être occasionnellement rencontrées. Les adénopathies de la **tuberculose** (scrofula) se caractérisent par une atteinte de l'état général et une tendance à la fistulisation chronique qui n'est pas sans rappeler l'actinomyose cervico-faciale.^{7,12,13} Des adénopathies similaires peuvent être cependant associées à la présence de mycobactéries atypiques. Des adénopathies généralisées peuvent être de plus observées dans la **sarcoïdose**. Elles s'accompagnent d'une atteinte de l'état général et d'une multitude de signes et symptômes qui traduisent la nature pluri-systémique du désordre.^{8,11}

Deux causes particulières d'adénopathies doivent être mentionnées chez l'enfant. La **maladie par griffure de chat** se présente souvent sous la forme d'une adénopathie isolée de dimension importante, chaude et douloureuse à la palpation, notée dans le territoire de drainage d'une blessure du visage ou des membres secondaire à une griffure de chat.^{7,12,13} L'adénopathie suit une évolution généralement chronique, pouvant persister des semaines et des mois, mimant donc ainsi un lymphome isolé. Cette condition trouve son équivalent dans la **tularémie** de l'adulte. Des polyadénopathies cervicales peuvent par ailleurs s'observer dans la maladie de **Kawasaki**. Cette condition, sérieuse par son risque d'anévrisme coronarien, se caractérise par la présence de fièvre, de polyadénopathies généralisées, de conjonctivite, d'atteinte de la cavité buccale (rougeur des lèvres, glossite, érythème oro-pharyngé) et des extrémités (érythème, oedème et desquamation).²⁰ La sévérité de son pronostic dicte un diagnostic immédiat.

Chez l'adulte, des adénopathies généralisées désignées de pseudo-lymphome peuvent parfois compliquer le **syndrome de Sjögren**, particulièrement dans sa

forme primaire (Sicca syndrome).^{8,11} Des transformations lymphomateuses franches peuvent aussi s'observer dans cette maladie.^{8,11} Signalons enfin que, sous la base d'une hypersensibilité, certains **médicaments** comme la Pénicilline²¹ et le Dilantin^{21,22} peuvent induire l'apparition de polyadénopathies. Δ

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(La partie 2 suivra au numéro d'octobre.)

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Announcements

October/Octobre 1989

October 5-8: IX National Dental Congress of Asociacion Odontologica Dominicana in Santo Domingo. Contact: IX Congreso Nacional de Odontologica, Apartado Postal 1002, Santo Domingo, Dominican Republic.

October 5-8: Annual Meeting of the International Association for Orthodontics and the American Orthodontic Society in Montreal. For details, contact: IAO Headquarters, 211 E Chicago Ave, Suite 915, Chicago, IL 60611. (312) 642-2602.

October 11-15: American Academy of Implant Dentistry in Scottsdale. Contact: Mr. John P. Winiewicz, PO Box 2002, Abington, MA 02351, USA.

October 18-21: V Congresso Coso Espanol de Estomatologia, Cirurgia Maxilofacial e Medicina Dentaira in Portugal. Contact: Ivo Furtado, R. Rainha, D. Amelia, 36-R/C-D, 1600 Lisbon, Portugal. Tel: 759-3948.

October 24-27: American College of Prosthodontists in Tuscon. Contact: Ms. Linda Wallenborn, 1777 NE Loop 410, Suite 904, San Antonio, TX 78217, USA.

October 24-27: 3rd International Medical, Hospital and Dental Equipment and Facilities Exhibition in Bangkok, Thailand. Contact: Elsa Wong, SHK International Services Ltd, 22/f National Mutual Centre, 151 Gloucester Rd, Hong Kong, 89587 SHKIS HX.

October 25-28: American Academy of Periodontology in Washington, DC. Contact: Ms. Jean Pierson, 211 E Chicago Ave, Suite 1400, Chicago, ILL 60611, USA.

October 27-28: International Congress for Oral Implantologists in New York. Contact: Ms. Margaret Jackson, 248 Lorraine Ave, 3rd floor, Upper Montclair, NJ 07043, USA.

October 27-31: American Institute of Oral Biology in Palm Springs. Contact: Dr. Philip Boyne, Dept of Surgery, School of Dentistry, Room 3306, 24777 University St, Loma Linda, CA 92350, USA.

October 30-November 1: American Academy of Maxillofacial Prosthetics in Tuscon. Contact: Dr. Gregory Parr, MCG/School of Dentistry, Dept of Prosthodontics, August, GA 30912, USA.

October 30-November 3: American Dental Trade Association in Maui, Hawaii. Contact: Mr. Nikolaj Petrovic, ADAT, 4222 King St, Alexandria, VA 22302, USA.

October 30-November 5: International College of Dentists in Honolulu, Hawaii. Contact: Dr. Richard Schaffer, One Metro, 51 Munroe St, Suite 1501, Rockville, MD 20850, USA.

November/Novembre 1989

November 1-3: 52nd Annual Meeting of the American Association of Public Health Dentistry in Honolulu, Hawaii. Contact: AAPHD, National Office, 10619 Jousting Lane, Richmond, VA 23235, USA.

November 2-3: 3rd Annual Bernard Jankelson Memorial Lecture sponsored by the International College of Cranio-Mandibular Orthopedics. Detailed information available from ICCMO International Headquarters, 830 Marsh & McLennan Bldg, Seattle, WA 98101, USA.

November 3: American Association of Dental Consultants in Honolulu, Hawaii. Contact: Dr. Alan Helerstein, 919 Deer Park Ave, North Babylon, NY 11703, USA.

November 3: American Endodontic Society in Honolulu, Hawaii. Contact: Dr. Alvin H. Arzin, 2 Learning Lane, Levittown, PA 19054, USA.

November 4-9: American Dental Association Convention in Hawaii. For convention pre-registration and first class group travel arrangements for 10 days, please contact: Dr. Bob Brandon, 85 Lonsdale Dr, London, Ont N6G 1T4. Tel: (519) 657-3368.

November 5-8: American Academy of Dental Radiology Contact: Capt. Tom McDavid, OASD Health Affairs, Pentagon Room 3D372, Washington, DC 20301-1200, USA.

November 8-12: American Society of Dentistry for Children in San Diego, CA. Contact: Ms. Carol A. Teuscher, 211 E Chicago Ave, Suite 1430, Chicago, Ill 60611, USA.

November 15-18: VI Congreso Internacional de Estomatologia y X Congreso Nacional de Odontologia in Lima, Peru. Contact: Dr. Ramon Castillo, President de los Congresos, Alfredo Salazar 583, Of. 102, San Isidro, Lima, Peru.

November 17-20: XX Congreso Asociacion Dental Mexicana Contact: Dr. Yolanda Villarreal de Justus, Ave Ejercito Nal #530 - 5 piso, Polanco, Mexico.

November 21-24: Congrès national de l'Association dentaire française in Paris. Contact: Dr. A. Deyrolle, Palais des Congrès, 92, av de Wagram, 75017 Paris, France. Tel: 42 27 89 00.

November 22-24: Swedish Dental Society Contact: Ms. Charlotte Nackstad, Stockholm International Fairs, Box 5843, 102 48 Stockholm, Sweden. Tel: 0046-8-663 12 50.

November 28-December 2: Osseointegration in Clinical Dentistry: Technician and Clinical Training Courses in Malmo, Sweden. For details, contact: Postgraduate Centre of Dentistry, Cal Gustafs vag 34, S21421 Malmo, Sweden.

November 30: Toronto Academy of Dentistry - 52nd Annual Winter Clinic at the Metro Toronto Convention Centre. For information, contact the Academy of Dentistry at (416) 967-5649.

December/Décembre 1989

December 8-10: 13th Annual Session and Scientific Meeting of the Association for Dental Sciences of the Republic of China in Tainan, Taiwan. Contact: Dr. Chin-Kuang Wen, 7F, No. 120, Sec. 2, Chung Hsiao E Rd, Taipei, Taiwan. Tel: 3965390-1.

December 14-16: The Dental Association of Thailand Contact Col Amnari Dhammajinda, Secretary General, The Dental Association of Thailand, 12 Soi Prasanmitr, Sukhumvit 23, Bangkok 10110, Thailand. Tel: 258-9251.

December 27-30: 44th Indian Dental Conference in Calcutta. For details write: Dr. K.L. Banerjee, Conference Secretariat, Dr. R. Ahmed Dental College & Hospital, 114, Acharya, J.C. Bose Rd, Calcutta - 700 014 India.

January/Janvier 1990

January: 26th International Alpine Dental Conference in Courcheval, France. Contact: L.W. Bryer, 24 Cadogan Sq, London SW1X 0J8, England.

January 14-20: Midwinter Dental Meeting of the Barbados Dental Association in Bridgetown. Contact: Mrs. Alison Hoad, Gardiner Austin Travel, Ridge House, Cavan Lanes, Bridgetown, Barbados.

January 20-25: XIV Congresso Paulista de Odontologia, XXVIII Seminario Odontologico Latino-Americano, II Congresso Universitario Paulista de Odontologia in Brazil. Contact: Dr. Joao Vieira de

Morae, President, Associacao Paulista dos Cirurgioes Dentistas, Rue Humaita, 389 - Bela Vista C.P. 2523, CEP 01321 Sao Paulo, Brazil. Tel: 37-4194.

January 20-27: XXIII Congreso de FOCAP in Atlapa, Panama. Contact: Dr. Ricardo Arango, president, XXIII Congreso internacional de FOCAP, PO Box 6777, Panama 5, Panama.

January 24-27: First World Endodontic Congress in Mexico City. Contact: Dr Jose Oynick, Prado Sur 480, Lomas Virreyes, Mexico 11000 DF, Mexico.

February/Février 1990

February 1-3: Miami Winter Meeting For more information, contact: East Coast District Dental Society, 420 S Dixie Hwy, 2-E, Coral Gables, FL 33146, USA. (305) 667-3647.

February 11-14: Chicago Dental Society's Midwinter Meeting. For pre-registration information, contact: Chicago Dental Society, 401 N. Michigan Ave, Chicago, IL 60611, USA.

February 18-22: Annual Scientific Convention of the Dental Association of Trinidad and Tobago. Contact: The Honourary Secretary, 115 Abercromby St, Port-of-Spain, Trinidad and Tobago.

March/Mars 1990

March: 27th International Alpine Dental Conference in Courcheval, France. Contact: LW Bryer, 24 Cadogan Sq, London SW1X 0J8, England.

March 7-11: International Association for Dental Research in Cincinnati, Ohio. Contact: Ms. Judith A. Gauchel, Scientific Program/Meeting Mgr, 1111-14th St NW, Suite 1000, Washington, DC 20005 USA. Tel: (202) 898-1050.

March 8-9: The 9th Jordanian Dental Congress in Amman. Contact: Dr. Irfan Sultan, Chairman, Scientific Committee, PO Box 1326, Amman, Jordan.

March 14-16: The 4th World Dental Congress of the Egyptian Clinical Dental Society in Cairo. Contact: Prof. Avd Elahdi Nasif Selim, College of Dentistry, Cairo University, Cairo, Egypt.

March 28-30: Big Apple New York Dental Meeting. Contact Dr. Leslie Zucker, 3201 Grand Concourse, Bronx NY 10468, USA.

March 28-31: Annual Dental Meeting of the Finnish Dental Society in Finland. Contact: Taru Ohtola, Training Mgr, Committee for Continuing Education, Akavatalo, Rautatielaisenkatu 6 SF-00520 Helsinki, Finland.

March 31-April 6: Annual Meeting of the Canadian Association of Oral and Maxillofacial Surgeons in Whistler, BC. ORAL IMPLANTS - Trouble shooting for successful attached prosthesis. Contact: Dr. Mike Kaburda, 208-600 Royal Ave, New Westminster, BC V3M 1J3.

April/Avril 1990

April 1-6: VIth World Congress on Pain in Adelaide, Australia. For information: International Association for the Study of Pain, 909 NE 43rd St, Suite 306, Seattle, WA 98105-6020 USA. (206) 547-6409.

April 25-29: American Association of Endodontists. For more information, contact: Ms. Irma S. Kudo, 211 E Chicago Ave, Suite 1501, Chicago, IL 60611, USA.

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Nobelpharma, Inc.	691
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Plax	724, 725
Procter and Gamble, Inc.	668
Progressive Solutions	697
Regional Municipality of Niagara	704
Royal College of Dental Surgeons	704
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1. Hechter, F.J., Symmetry and dental arch form of orthodontically treated patients. *JCDA* 44:173-184, 1978.

For books gives the author's name, book title, location and name of publisher and year of publication.

2. Kilpatrick, H.C. *Work simplification in dentistry*, ed. 2, Philadelphia, Saunders, 1964.

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The Use of Electronic Devices in the Diagnosis and Treatment of Temporomandibular Disorders

Editor's note: Normally "It's My Opinion" is strictly limited to a concise and succinct one page of this Journal. This month, because of the roles and reputations of the contributors and the profundity of their combined opinions, the space rule has been relaxed. The Journal invites readers to continue to express personal opinions on any topic in this forum.

Clinicians are often in the position of having to decide whether to use a new form of therapy or instrument that is heavily promoted or advertised. Although it may appear that this new development is the outgrowth of years of research and clinical testing, this is not always the case.

As an example of the problems that this situation can create for the dentist and his patients, one only has to remember the era of implant treatment that preceded the scientific development and clinical validation of osseointegrated dental fixtures. Presently, several electronic devices are being promoted for use in the treatment of Temporomandibular Disorders (TMD). We offer the following comments in the hope of placing the use of these devices in perspective.

The International College of Cranio-mandibular Orthopedics (ICCMO) recently proposed that:

"The only truly objective means of such diagnosis, treatment and validation, for conditions involving muscular skeletal dysfunction of the head and neck is electronic diagnosis of the musculature and craniomandibular relationship. The use of the instrumentation and technology presently available consisting of electromyography, TENS (for relaxation of muscles), and mandibular tracking provide a purely objective compilation of data not heretofore attainable and should not only be encouraged, but insisted upon as current state-of-the-art in the diagnosis and treatment of patients with head and neck pain".¹

Statements such as this give the impression that the techniques advocated have been shown, in controlled clinical trials, to be unequivocally superior to the physical examination, analysis of symptoms and conventional approaches to treatment. To our knowledge, this is not so. Furthermore, they imply, erroneously, that clinicians who do not avail themselves of this technology do not treat their patients in an acceptable manner. In fact, this argument has been used in a malpractice suit in the United States.

On the other hand, there are many dental scientists and clinicians, including ourselves, who believe that although electronic instruments offer new perspectives of the behaviour of the musculoskeletal system and are valuable aids to basic and clinical research, at the moment there is no good evidence that these instruments are useful in the diagnosis and treatment of TMD.

In addition, we are concerned about some of the tenets used to support the clinical use of the instruments. Many of these are unproven, doubtful or have already been shown to be incorrect. As a result, advocates of these clinical approaches come to some odd conclusions when data from healthy people do not fit their conceptions. In one remarkable paper, it was concluded that approximately 81 per cent of symptomless adults taking part in the study were really dysfunctional;² in another, the author writes of the "almost universal existence of various degrees of muscle accommodation and sustained tension".³ Statements such as these are fatuous: they show a complete lack of objectivity, and seriously impair the credibility of the author and of those who cite their work to justify the value of similar diagnostic tests. When such criteria are used, many patients will be wrongly told that they are ill. If, as has been shown, kinesigraphic⁴ and

electromyographic findings⁵ cannot reliably distinguish between symptomatic and asymptomatic groups, it is difficult to see how they can be useful in diagnosis. It is certainly premature to claim that the diagnostic value of one of these instruments is equivalent to the electrocardiogram.⁶

Finally, the treatment dictated by these tenets (eg. the correction of presumed craniomandibular "malalignment") appears to be inappropriate because it is based on unproven or incorrect assumptions. Treatment with these instruments calls for electrical stimulation in order to completely relax the jaw muscles, because the jaw closing muscles are postulated to be completely relaxed in the "true" rest position. This "neuromuscular rest position" is supposed to coincide with the clinical rest position in asymptomatic subjects. If the two are not coincident, the clinician may take radical steps to change the face height of his patient. However, contrary to the hypothesis, the two positions are several millimeters apart in healthy people. Furthermore, the literature suggests that there is normally activity in the jaw closing muscles at the clinical rest position.^{2,7,8}

Following relaxation, the clinician is supposed to increase the intensity of electrical stimulation until the teeth tap together in what is termed the "neuromuscularly relaxed occlusal position". It is postulated that this position should coincide with centric occlusion, but again the two positions are different in normal subjects,⁹ and therefore there is no valid reason to try to make them match. In addition, there is no basis to the claim that the "neuromuscular occlusal" position is a physiologic position.^{10,11} We suggest that the diagnostic criteria and treatment decisions used in conjunction with these instruments were developed from hypotheses that appear to be incorrect, and that the initial testing of the efficacy of the instruments seems to have been inadequate. Once it was found that data from asymptomatic subjects did not correspond to what was hypothetically labeled as "normal", further testing became imperative, but this does not appear to have been done. Thus, **in our opinion**, these instruments do not yet have a proven value in the diagnosis and treatment of TMD, and their use for purposes other than research could lead to misdiagnosis and overtreatment of patients.

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Submitted by:

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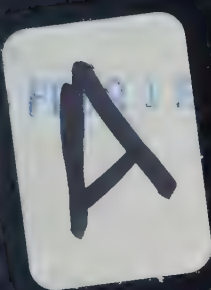
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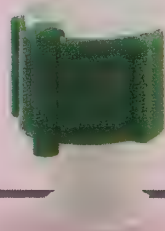
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CDA MISSION STATEMENT

The Canadian Dental Association serves the dental profession — and through the profession the Canadian public — as the authoritative national voice and resource for dentists.

In cooperation with the provincial dental associations and affiliated organizations, CDA offers services, in both official languages, intended to support and advise all areas of dentistry and to represent, protect, promote and develop the interests of the dentist as ethical practitioner, professional, educator, student, researcher, business person, citizen and individual.

CDA recognizes a particular responsibility to contribute to the development of national positions and standards related to dentistry, dental education, dental research, dental equipment, dental materials and dental personnel.

CDA is dedicated to the principle that all Canadians should have the best oral health care it is possible to provide; it actively seeks input from and dialogue with governments, consumers and all those interested in dentistry to enable it to serve more effectively both its members and the Canadian public.

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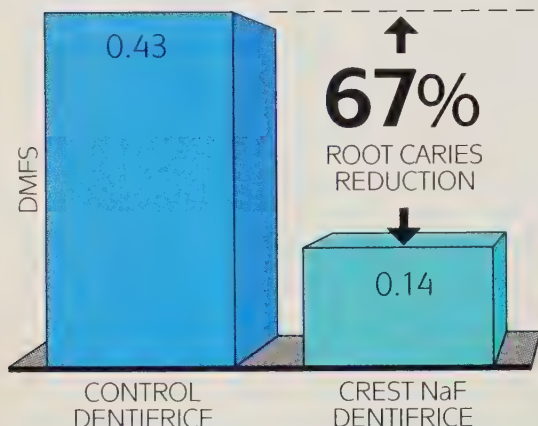
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JOURNAL



NOW CREST IS THE ONLY DENTIFRICE CLINICALLY PROVEN TO HELP PREVENT FRUSTRATING ROOT CARIES



We don't have to tell you about the difficulties and frustration in treating certain root caries, but we can give you some new clinical information on prevention.

Crest with sodium fluoride has now been shown to reduce the incidence of root caries by 67% in a controlled clinical study involving 810 adults over 54 years of age! And, considering a National Institute of Dental Research

oral health survey reported 25% of patients over age 40 have at least one carious or filled root surface lesion,² that's important to know.

So give your patients the clinically proven advantage against root caries that only Crest has been shown to offer. Recommend with confidence.

References: 1. Jensen ME, Kohout F. The effect of a fluoridated dentifrice on root and coronal caries in an older adult population. JADA 1988;117:829-832 2. 1985 NIDR adult oral survey Oral Health of United States Adults (1985-1986)

Crest

The clinical recommendation for root caries



"Crest contains sodium fluoride which is, in our opinion, an effective decay preventive agent, and is of significant value when used in a conscientiously applied program of oral hygiene and regular professional care." CANADIAN DENTAL ASSOCIATION

JOURNAL

Canadian
Dental
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October 1989

Vol. 55 No. 10

Feature Articles

The new CDA uniform system of
codes and list of services

789

Part One — Beginnings
P. Ralph Crawford, BA, DMD

Challenges and dilemmas,
in behavior guidance of the
pediatric patient

793

Rosamund Harrison, DMD, MS, MRCD(c)
Robert J. Feigal, DDS, PhD

Facial swelling and asymmetry
in children

799

Systematic diagnosis and review
Michael J. Sigal, DDS, MSc, DipPed, MRCD(c)
Norman Levine, DDS, MScD, DipPed, FRCD(c)

Treatment modalities for
primary incisors

807

S.J. Weinberger, DDS, FRCD(c)

Scientific

A survey of Canadian pediatric
dentists

815

Practice characteristics and views on dental
education
Hossam ElBadrawy, DDS, MS

Rubenstein-Taybi Syndrome

821

W.S. Cheung, BA, DDS, FRCD(c)

Diagnostic différentiel des
masses cervicales

825

Partie 2
Rénald Pérusse, DMD, MD

Departments

761

Editorial

"If I knew all the answers"

762

President's Column

"Free prophylaxis with every adult
examination"

763

News Update

770

CDA RSPs

775

Brieflies

776

Library/Resource Centre

777

DAP Advisor

778

Book Reviews

779

Obituaries

783

The Dental Laboratory
and You

785

Money Management

831

Announcements

833

Marketplace

835

Advertisers' Index

837

It's My Opinion!

"The other side of confection use and dental
caries"



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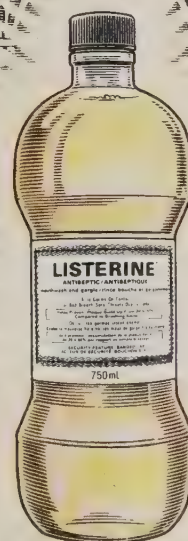
Pedodontics
October is CFDE Month



IS IT HERESY TO SUGGEST THAT LISTERINE SIGNIFICANTLY REDUCES PLAQUE?

Ironically enough, the one thing missing during the Spanish Inquisition was a true spirit of inquiry. Torquemada and his bloodthirsty followers may have made a pretense of asking questions but they weren't interested in the answers. Those that didn't conform to their special vision of the world were branded as heretics and brutally murdered. ❧ If one is to learn the truth, it is necessary to keep an open mind. Which is why we're asking you to cast aside your preconceived notions about Listerine and spend a moment reading all the facts. ❧ Clinical studies show that Listerine used twice daily after normal brushing will further reduce supragingival plaque and gingivitis by as much as 34%.^{1,2,3,4} ❧ In fact, the studies are so conclusive that Listerine is the only over-the-counter rinse to be accepted by the American Dental Association Council on Dental Therapeutics for helping reduce supragingival plaque and gingivitis. No mean feat when you consider the stringent criteria used in its evaluation. ❧ The clinical trials indicate that Listerine, when used twice daily for 30 seconds in addition to normal oral hygiene, is effective in helping to control supragingival plaque accumulation. ❧ As a direct result, Listerine helps prevent gingivitis. ❧ The scientific explanation for this is a simple one. Listerine is a broad spectrum bactericidal rinse: it destroys the major oral micro-organisms found in dental plaque. ❧ Rinsing with Listerine twice daily, along with brushing, flossing, and regular dental care, is a step towards healthier gums for your patients that need extra help. That may sound like heresy. But it's also the truth.

ACCEPTED BY THE ADA TO HELP
PREVENT AND REDUCE SUPRAGIN-
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BEFORE YOU CAN HAVE FAITH IN LISTERINE YOU NEED TO HAVE THE FACTS.



Listerine is the only non-RX antimicrobial rinse accepted by the ADA to help control supragingival plaque and gingivitis, based on long term clinical studies following the ADA Guidelines (Council on Dental Therapeutics):

J.A.D.A. 112:528, 1986.

1. Studies were randomized, double-blind, parallel group design.
2. Study populations were representative of patients who use the product.
3. Both sexes participated.
4. Frequency and duration of product use were representative of actual use label directions.
5. Product was compared to placebo control.
6. Studies were at least six months in duration.
7. Product was tested in at least two studies by different independent investigators.
8. The same examiner was used with the same subjects for each index and procedure throughout each study.
9. Supragingival plaque was scored by an acceptable plaque index (the Turesky modification of the Quigley-Hein Index).
10. Studies used an acceptable gingival index which met the guideline criteria (Modified Gingival Index).
11. Evaluations were conducted at baseline, three months, and six months.
12. Extrinsic tooth stain and soft tissue condition were evaluated at

baseline, three months and at end of study.

13. Effects on supragingival plaque microbial composition were measured in two separate six-month microbiological studies by two different, independent investigators.

In conjunction with normal oral hygiene and regular professional care, Listerine:

A. Helps prevent supragingival plaque and gingivitis.

DePaola L.G., et al. "Chemotherapeutic inhibition of supragingival dental plaque and gingivitis development". J. DENT. RES. 16:311-315, 1989.

In this six-month, double-blind study, twice-daily use of Listerine Antiseptic with regular oral hygiene following professional prophylaxis inhibited the development of both supragingival plaque and gingivitis by 34% compared to the hydroalcoholic control.

	Listerine	Control
Plaque Index	1.15	1.75
Gingival Index	0.92	1.39

B. Reduces existing supragingival plaque and gingivitis.

Lamster J.B., et al. "The effect of Listerine Antiseptic on reduction of existing plaque and gingivitis". CLIN. PREV. DENT. 5:12-16, 1983.

This six-month, double-blind study demonstrated the efficacy of twice-daily use of Listerine in reducing plaque and gingivitis. Scores measured a 20.8% reduc-

tion in supragingival plaque and 27.7% reduction in gingivitis in the Listerine group - a significant improvement over normal oral hygiene alone for the Listerine group versus the vehicle control.

	Listerine	Control
Plaque Index	1.93	2.44
Gingival Index	1.20	1.66

Listerine destroys major oral presumptive pathogens within 30 seconds.

Minah G., et al. "Effect of six month use of an antiseptic mouthrinse on supragingival dental plaque microflora". J. CLIN. PERIO. 16:347-352, 1989.

Goldner S.B. Rubin M., Brogdon C. "Antimicrobial activity of O.T.C. mouthwashes". Data on file, 1986.

Plaque Microorganisms Susceptible to Listerine Antiseptic*	
Gram-Positive Facultative Cocci	Streptococcus sanguis
	Streptococcus mutans
	Streptococcus salivarius
Gram-Positive Facultative Rods	Lactobacillus acidophilus
Gram-Positive Anaerobic Rods	Actinomyces viscosus
Gram-Negative Anaerobic Rods	Bacteroides intermedius
	Fusobacterium nucleatum
	Leptotrichia buccalis

Yeasts Candida albicans

*in vitro testing

With regular, long term usage Listerine:

Does not cause extrinsic tooth stain.

Does not promote calculus formation.

Does not alter taste perception.

Does not alter the balance of normal oral flora.

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*Caution: Do not give to children under 6. Contains: Alcohol 21.90% w/v, Eucalyptol 0.091% w/v, Thymol 0.063% w/v, Menthol 0.042% w/v. "Listerine has been shown to help prevent and reduce supragingival plaque accumulation and gingivitis when used in a conscientiously applied program of oral hygiene and regular professional care. Its effect on periodontitis has not been determined". COUNCIL ON DENTAL THERAPEUTICS AMERICAN DENTAL ASSOCIATION. For more information on Listerine clinical studies or prescribing details call 1-800-668-1503.

ACCEPTED BY THE ADA TO HELP PREVENT AND REDUCE SUPRAGINGIVAL PLAQUE AND GINGIVITIS.

“If I Knew All The Answers. . .”

Some months ago Val Werier, a writer for the *Winnipeg Free Press*, whimsically posed a number of intriguing questions. Among them were: Do birds hear or see the worm, do flies get a headache when they walk upside down on the ceiling, do politicians really enjoy kissing babies, do employees of supermarkets and department stores take lessons in becoming invisible, and do fish sleep? Needless to say, Mr. Werier didn't come up with any profound answers.

In the same vein, Corporal Max Klinger of M.A.S.H. TV fame was heard to say in a summer re-run, “If I knew all the answers I would run for God!”

Knowing all the answers in dentistry would be wonderful. Dentists could prevent that emergency arriving at the office 4:30 on a Friday afternoon. Or the midnight panic call just as the dentist gets into bed. Missed appointments and open spaces in the daily schedule could be eliminated. Preventing illness among staff members would cure all absenteeism and knowing what the government was *really* going to do with taxation would help balance the books.

Routinely avoiding dry sockets; obtaining the perfect root canal obturation; guaranteeing lower dentures to stay in place; and creating non-detectable margins would certainly make any dentist a candidate for a Supreme Being.

The Canadian Dental Association would love to know all the answers.

- How can dentists convince every community that fluoride is safe and beneficial?
- How do you eliminate all dental disease and maintain prosperity for dentists at the same time?
- For what reason do some dentists provide less than satisfactory treatment when they really know better?
- Why do some provinces accept CDA's Dental Awareness Plan with enthusiasm and others “go it alone”?
- Why do some jurisdictions embrace mandatory membership in CDA as salvation and others investigate going voluntary?
- Why do individual dentists bask and profit in the benefits of CDA's endeavors and not bother to take out membership? (It's called the “free ride syndrome”)
- Why can't dental organizations (there aren't that many for only 15,000 dentists) really try to unite resources for one Insurance Program across Canada — its the united we stand divided we fall syndrome.
- Why do some universities make every effort to reduce class sizes and others haven't done a thing?
- AND, why can't the CDA Journal be delivered in the same month it is published?

The above is a mere sampling of questions raised by various dentists during the recent CDA Convention in Vancouver. It would be great if all questions had “pat” answers, but this is not the way of the world. Dental associations are not asking members to be “Candidates for God” but they are asking for continued support and participation as they seek solutions to perplexing problems. Think about it!

P. Ralph Crawford, DMD,

Editor: Journal of the Canadian Dental Association

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President's Column

“Free prophylaxis with every adult examination. . .”

Those of you who join the annual migration of snow birds to the warmer climes of Florida, Arizona, Hawaii or Kokomo (Beachboys 1986) will have seen the monstrous and tasteless advertisements for dental services in newspapers, television and the yellow pages. God save America, but please keep this type of practice marketing south of the 49th. . .

One of the hot topics of discussion when CDA Executive members and senior staff held their annual planning and priority session this month in la belle province de Québec was “advertising the dental practice” and the role, if any, that CDA has to play in this arena. The jurisdiction of provincial licensing bodies was quickly recognized and formal correspondence has been directed to these groups for the required and respected feedback before CDA’s newly revitalized Committee on Ethics attempts to draft CDA guidelines. But even this feedback is incomplete; we need to know how the tax paying dental practitioners we represent — our grassroots CDA members — feel about this issue.

Today’s yuppies will live longer — medical advances are pushing up life expectancy and more of us are lasting into our 80s and 90s. Fluoridation, dental health programs, sugar-free pop and gum, and increased dental awareness have dramatically improved the dental health of all Canadians. The Yuppie Puppies, (sons and daughters of yuppies) and the Flyers — fun loving youth on the way to success — know little or nothing of caries or maligned teeth — theirs is the perfect smile. These kids knew about a fancy cheese like Brie back when they could barely point to it and say “bwie.” Before they lost their primary dentition, they were munching tofu and endive salad. High powered advertising sold them their Reebocks, Nikes or Cons not to mention their Ralph Lauren polo shirts. They are accustomed to advertising and some would say, are waiting to be told what they need in the way of dental care.

We are told, in fact, that we are competing for the consumer’s attention. Practice management consultants tell us to keep those flashy home magazines and the travel and fashion rags out of our waiting rooms because they tempt the consumer to sacrifice dental care for expensive dreams, being sold through their advertisements. This may be true, but I’ve never been able to bring myself to cancel my favorite subscriptions.

My practice has been pretty well closed for some time now and the only new patients are those referred by my existing clientele through the decidedly old-fashioned “word of mouth” process. Such is the luxury of an established practice in rural Ontario and, I dare say, rural Nova Scotia or B.C. for that matter.

What position should your national association take with respect to advertising? Should CDA sanction Semantodontics-type letterhead and appointment cards such as “family dentistry” or “gentle dental care?” “What about news letters to my patients?” several of my confrères have asked. “After all, they only include my practice address and office hours?” asked another. Some feel that any change may open the door to the tent and let the proverbial camel in; others feel it is better to lay down some realistic guidelines and avoid the inevitable sandstorm of discontent.

I want to hear from *you*. Make your views known today. Write me care of CDA Headquarters, 1815 Alta Vista Drive, Ottawa, Ontario, K1G 3Y6.

*Kevin L. Roach, BSc, DDS,
President of the Canadian Dental Association*

Federal budget cuts

Area dentists concerned that military bases will probably be phased out

One of the major recommendations of federal Finance Minister Michael Wilson's April 27 budget was that certain Canadian Forces bases across Canada would be closed.

Several of these bases are adjacent to towns and the military payroll, along with supply and services, have, over the years become a mainstay of the community's economy.

The closures, if they are carried out, will directly affect the dentists in those communities.

Summerside, PEI

A good example is Summerside, Prince Edward Island, a town with a population of about 8,000, where Dr. John Robertson, a past President of the Canadian Dental Association has practised for more than 20 years.

Dr. Robertson told the Journal that the nine Summerside dentists, two of whom are newcomers to the town in the past year, will suffer at least a 10 per cent drop in patient flow at the outset. When all the spinoffs are considered, the decrease may be as high as 20 per cent, he said.

The town, which has a trading area of about 15,000 is adjacent to a major Maritime Air Group military base, housing 413 Transport and Rescue Squadron, 880 Maritime Reconnaissance Squadron and 420 Air Reserve Squadron. Much of the activity has been in air-sea rescue work along the East Coast. Scheduled for closure by 1992, the Base is no stranger to these phaseout threats. They have surfaced from time to time since the early 1970s. This time however, it appears to be the real thing. Defence Minister Tom McKnight has informed PEI Premier Joe Ghiz there will be no reprieve. It has been estimated that more than \$60 million will be saved annually through the closure of this Base.

Shockwaves throughout PEI

The economic shockwave would be felt throughout Canada's smallest province of 125,000 people. Next to government services itself, the Base is the second largest employer on the Island with a comple-



Air-Sea Rescue operations are graphically depicted in this scene of activities featuring a "Labrador" aircraft.

ment of 700 to 800 military personnel. More than 1,300 civilian employees would lose their jobs. The potential loss to the community has been estimated at about \$50 million a year. That translates into almost \$500 for every man, woman and child on the Island!

Dr. Robertson noted that the departure of military dependents will be very obvious in civilian dental offices. It has been estimated that there would be a depletion of as many as 2,000 patients in the province's Childrens' Dental Care Plan, which provides treatment in both government and private offices for all children up to the age of 17.

"Almost immediately upon receipt of notice of the closure, some specialty treatment such as orthodontics and endodontics have been postponed awaiting final decisions", Dr. Robertson told the Journal. "People don't want to commit dollars to dentistry if their future is uncertain. Even now, property values have dropped by as much as 25 per cent. Seventeen home buying contracts were cancelled in one day. A multi-million

dollar motel complex on the waterfront has been put on hold. We're not looking forward to the final close-out. To give you another idea of the effect, the Island supplier of electricity, Maritime Electric, will lose 30 per cent of its business when the Base is gone".

Portage la Prairie, Manitoba

The negative effects on dental practices were not quite as evident among dentists in Portage la Prairie, Manitoba. Two of that city's dentists, Drs. Bill Young and Joe Stasiuk, reported that this community, unlike Summerside PEI, is not a one industry town. Agriculture is still the economic base of the community of 13,500, which has a total trading area of nearly 40,000. The closure of the Base in Portage will see about 600 military personnel transferred and a loss of about 200 civilian jobs. Manitoba's fourth largest city fears the effect will be about a \$20 to \$30 million dollar loss to the community's economy.

Located about 45 minutes west of Winnipeg on the Trans Canada highway,

(PHOTOS COURTESY OF DEPARTMENT OF NATIONAL DEFENCE)

the community supports six dentists. Drs. Stasiuk and Young said that quite a number of people obtain regular dental care in Winnipeg and all specialty services are provided there. Both dentists indicated that the net effect of the closure will be a "blip" on patient flow, which within a few years will probably not be noticeable.

Dr. Young noted an interesting side effect. He said he will lose his dental hygienist. The military personnel often are married to hygienists and the small community of Portage la Prairie will be without one of its sources of auxiliaries — already scarce in most rural areas.

Defence Minister says "No"

In spite of a well-mounted representation to Ottawa, supported by all three Manitoba provincial political parties, the answer the Portage la Prairie delegation received was a firm "no". Preliminary figures indicate the Government expects to save \$529.1 million over 15 years as a result of closing the Portage Base.

On the 19th of June, busloads of supporters from PEI received a similar reply from the Minister of National Defence when they descended on Parliament Hill. "There is no military operational need to maintain that base", Mr. McKnight said.

In attempts to decrease the federal deficit, it would appear that closure of military bases is one of the "easier targets". Increases in defence costs have been running well ahead of the general inflation rate. It is more popular with the general population to decrease military spending than to cut domestic programs and the influence of "Glasnost" in the USSR has no doubt taken much of the pressure off the need to maintain defence facilities the powers-that-be consider unnecessary.

Dental Services reduction?

Brigadier-General J.F. Begin, Director General Dental Services, told the Journal that although seven bases will be closed and seven reduced in size, the effect on Canadian Forces Dental Services is, for the moment, expected to be "minimal". General Begin noted that "the tasks and personnel will in most cases be reassigned to other bases. Where a large number of personnel move to a remaining location, it is anticipated a number of dental personnel will be reallocated as well."

He noted further that "it is anticipated that the Forces will be 'downsized' from approximately 87,400 to a figure in the neighborhood of 82,000." (The final



A "Buffalo" aircraft, used in rescue operations, seen at Summerside PEI Base.

number had yet to be determined when Gen. Begin was interviewed.) "It would appear" he continued, "that as the Forces are reduced in size, the dental services will be reduced proportionately. However, this may not necessarily hold true. I recently identified to higher authorities at National Defence Headquarters that there is an existing shortfall in the CFDS establishment to meet the treatment needs of the military population. Having said that, the hope of obtaining these additional resources to meet the existing workload is probably remote under the present circumstances."



Brigadier-General J.F. Begin, Director General, Dental Services.

"Presently the dental officer strength matches the authorized establishment, and it is forecast that we will be short a number of dental officers within the next year," Gen. Begin explained. "This will sharply reduce our ability to continue to provide the same level of care to which the Canadian Forces have become accustomed."

Dental Services' mandate

"In defining the CFDS mandate," Gen. Begin said, "it must be understood that we make a distinction between optimum care and a functional level of care. As optimum care is not always available to the entire Canadian population, optimum care for all members of the Canadian Forces also remains an elusive goal. In more realistic terms, the CFDS manages to provide a comprehensive level of care to all members of the Canadian Forces and this level of care, defined as a functional level, is sufficient for members of the Forces to fulfil their operational roles at all times."

"The difference between a functional (or operational) level of care and optimum care is commonly referred to as elective care," the General explained. "At present 91 per cent of the members are dentally fit to fulfil their operational role in a given year. A significant number are receiving elective care, including complex crown and bridges and rehabilitative care, to establish a high level of oral health." He said the CFDS is also becoming "more and more involved in cosmetic dentistry".

"The Canadian Forces Dental Services is providing an unprecedented level of quality care to all members of the Canadian Forces," Gen. Begin told the Journal. He believes the "recent budget reductions will have a small impact but should not affect the overall delivery of dental care significantly". He does believe, however, that if the strength of the Dental Services complement is reduced "this will jeopardize an excellent dental care program which is the envy of a number of our military allies in the Western world." △

The Journal introduces nine Specialty Editors

The **Journal** in its continued endeavour to bring readers only the finest in relevant dental information has recently re-organized the group of Editors representing recognized specialties. This was only accomplished after considerable consultation.

The **Journal** is grateful for the kind cooperation of each of the nine specialties, the CDA Dental Specialties Committee and its Chairman Dr. James N. Wright, for their assistance in the development of the Specialty Editors' Terms of Reference.

Each specialty has nominated its own representative as a Specialty Editor and the **Journal** is proud to have them listed on the Masthead and to introduce them to readers.

Specialty Editors – Terms of Reference

Preamble: The continuing education of its readers is a major objective of the Journal of the Canadian Dental Association. To achieve this goal, the Publications Committee has assembled a team of Specialty Editors whose collective knowledge, experience and energy will be actively sought to enhance the educational content of the Journal.

Terms: Specialty Editors will be:

- (i) Members in good standing of the Canadian Dental Association.
- (ii) Certified dental specialists with demonstrated expertise in scientific writing.
- (iii) Appointed by the President of the Canadian Dental Association (on the recommendation of the Publications Committee, selecting from nominees from the appropriate specialty society) a three year term renewable once.
- (iv) Referees for appropriate scientific articles and textbook review, and/or suggest appropriate referees and reviewers.
- (v) Expected to provide a review article on their specialty, at least once, during each appointed term.
- (vi) Encouraged to submit scientific articles, news items and general interest comments pertaining to their specialty.
- (vii) Prepared to offer the name of a suitable successor.

Endodontics



William Herbert Christie, DMD, MS, FRCD(c)

Dr. Christie, the son of a dentist (John Andrew Christie, DDS), graduated from the University of Manitoba in 1964. He subsequently received his Certificate in Endodontics and his Masters degree from Ohio State University in 1974. He carried on a general practice (with his father) in Norwood, Manitoba, from 1964 to 1971. Dr. Christie then conducted a specialty practice in Endodontics in Winnipeg, from 1974 to 1989.

Involved as a part time member of the faculties of dentistry of Ohio State University and the University of Manitoba, Dr. Christie became full time Associate Professor and Section Head — Endodontics — at the University of Manitoba in July of this year.

Dr. Christie is a Past President of the Canadian Academy of Endodontics and the Winnipeg Dental Society. He has also served as an examiner for the College of Dental Surgeons of British Columbia and for the Royal College of Dentists of Canada.

Paedodontics



J. Victor Legault, DDS, Cert Paedo, has conducted a private practice in paedodontics in Montreal since 1965. He received his DDS from the University of Montreal in 1962 and his specialty certificate in Paedodontics from the University of Rochester, New York, in 1965.

He was Assistant Professor, Paedodontics at the School of Dental Medicine, University of Montreal from 1965 to 1970 and continues to be in charge of the Paedodontic Clinic there. He also is director of the Paedodontics Clinic at McGill University. At

I'Hôpital Marie-Enfant, Montreal, Dr. Legault is in charge of paediatric dentistry.

He is President of the Federation of Dental Specialists of Quebec, and also of the Association of Dental Specialists for Children of Quebec.

Active in the Canadian Dental Association, Dr. Legault is a member of the CDA Dental Specialties Committee and the Committee on Hospital and Institutional Services.

He is also Treasurer of the Canadian Academy of Children's Dentistry.

Oral Pathology



J.H.P. (James) Main, BDS, PhD, FDSRCSE, FRC Path, FRCD(c) is Professor and Head of the Department of Oral Pathology in the Faculty of Dentistry at the University of Toronto and Head of the Department of Dentistry at the Sunnybrook Medical Centre, University of Toronto. Dr. Main is also the Director of the Postgraduate Program in Oral Pathology.

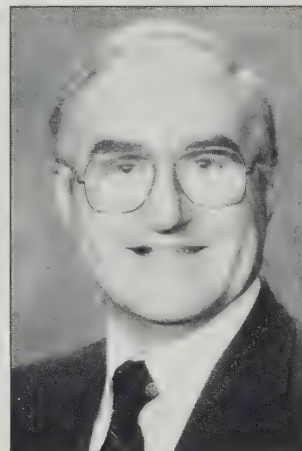
A native of Scotland, he was awarded his dental degree and his PhD from the University of Edinburgh, and was on staff there before moving to Canada in 1969.

Dr. Main served with the Royal Air Force for three years, at the NATO Headquarters in Fontainebleau, France, and spent a sabbatical year at the National Institutes of Health, Bethesda, Maryland, U.S.A.

He has been President of the Royal College of Dentists of Canada, President of the Canadian Academy of Oral Pathology, and is currently President of the International Association of Oral Pathologists. Dr. Main is a member of the Canadian Dental Association's Council on Education and Accreditation and the CDA representative on the Board of the National Cancer Institute of Canada.

He has contributed widely to the professional and scientific literature, chiefly on the subject of oral cancer.

Dental Radiology



Colin Price, BDS, FDSRCS, MDS, FRCD(c), is Professor and Chairman in the Division of Oral Radiology, Faculty of Dentistry, University of British Columbia. Dr. Price graduated in dentistry in 1960 at the University of Birmingham, England. He worked in hospital dentistry for six years, and during that time obtained a Fellowship in Dental Surgery of the Royal College of Surgeons (England).

The next 10 years were spent teaching Oral Diagnosis, Oral Radiology and Oral Surgery at the University of Birmingham

Dental School.

Dr. Price received a Master's degree on an oral radiological topic, from his Alma Mater, in 1973.

For the past 13 years, he has taught Oral Radiology at the University of British Columbia.

He has a Fellowship in Oral Radiology from the Royal College of Dentists of Canada.

Dr. Price has the distinction of being the only certified specialist in Oral Radiology in British Columbia.

He is serving as President of the Canadian Academy of Oral Radiology and is Regional Director for North America, in the International Association of Dento-Maxillo-Facial Radiology. Δ

Periodontics



James E. Stakiw, DMD, PhD, Dip Perio., conducts a private practice limited to Periodontics, in London, Ontario.

He also serves as a part-time clinical instructor in his specialty at the Faculty of Dentistry of the University of Western Ontario.

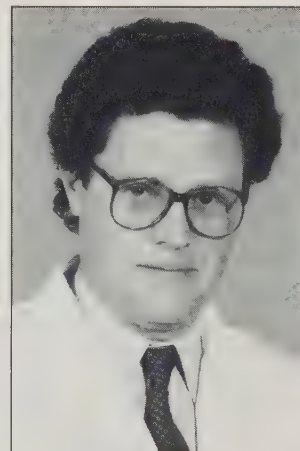
Currently, he is Vice-President of the Council of the Royal College of Dental Surgeons of Ontario.

He received his DMD degree from the University of Manitoba in 1966. In 1971 Dr. Stakiw was awarded his PhD in Oral Biology-Physiology and his diploma in his specialty of Periodontics, in 1973.

He has had extensive experience as a teacher, on a part-time basis, since 1968, when he lectured in Oral Biology at the University of Saskatchewan, until 1972. Dr. Stakiw taught Periodontics at the University of Western Ontario from 1974 to 1985, when he left to devote full time to his private practice. He served from 1983-85 as Chairman of the Department of Periodontology at UWO's Faculty of Dentistry.

He has served for several years as a member of the Council of the Royal College of Dental Surgeons of Ontario and was named Vice-President in January last. Dr. Stakiw has also given service to the Canadian Dental Association, notably as a member of the Council on Education.

Oral and Maxillofacial Surgery



David Stanley Precious, DDS, MSc, FRCD(c), who is Chairman, Department of Oral Diagnosis and Oral and Maxillofacial Surgery, Head of the Division of Oral and Maxillofacial Surgery, Acting Head, Division of Oral Diagnosis and Director of the Graduate Program of Oral and Maxillofacial Surgery, in the Faculty of Dentistry, Dalhousie University, received his own DDS (1969) and MSc (1972) from that University.

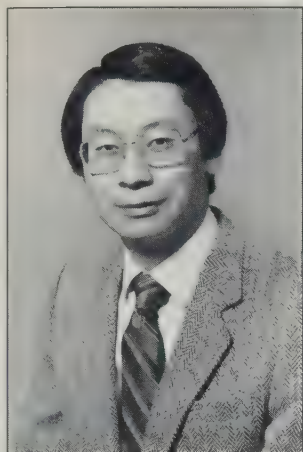
He began his Dalhousie teaching career as a Teaching Fellow in Oral Surgery in 1969-70. He

became Assistant Professor in that discipline in 1973 and in 1975, was named Associate Professor. From 1987 to the present, he has been Professor of Oral and Maxillofacial Surgery.

He has given service as an examiner for the Royal College of Dentists of Canada, as a member of the Dental Examining Board of Canada and for the College of Dental Surgeons of British Columbia.

Dr. Precious is currently a member of the Canadian Dental Association's Dental Specialties Committee and has served as a CDA Accreditation team member, as a Teaching Conference presenter and a field surveyor on hospital services.

Orthodontics



Edwin Hsun K. Yen, DDS, Dip Ortho, PhD, has been Professor, Department of Preventive Dental Science (Orthodontics), Faculty of Dentistry, University of Manitoba, since 1986 and Head of that Department since 1987.

He received his DDS degree from the Faculty of Dentistry, McGill University, Montreal, in 1973. Dr. Yen pursued postgraduate studies at the University of Toronto and received his Diploma in Orthodontics in 1977. He was awarded his PhD in Oral Biology from the same University in 1978.

He learned much about the nature of the Canadian Dental Association in 1972, when he served as Student Member on the CDA Board of Governors, and later (1973-77) served as chairman of the Committee on Student Affairs, Council on Education.

Dr. Yen is currently a member of the Dental Science and Grants Review Committee of the Medical Research Council of Canada and is President of the Manitoba Orthodontic Society.

He is also serving as a member of the Review Committee, Special Grants Review Committee, National Institute for Dental Research.

He previously gained experience in the dental journalism field as Editor of the "McGill Dental Review" (1972-73). Also, since 1984, Dr. Yen has been a member of the Newsletter Committee, Midwest Society of Orthodontics.

Prosthodontics



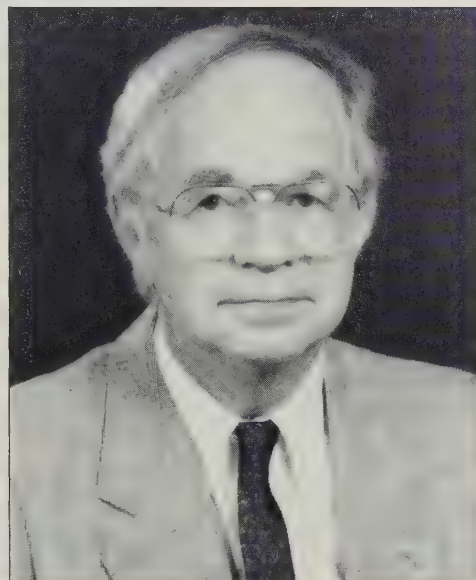
Michael I. MacEntee, LDS, Dip Prosth., FRCD(c), PhD, Professor and Chairman, Division of Prosthodontics, Faculty of Dentistry, University of British Columbia, received his Licenciante in Dental Surgery from the Royal College of Surgeons in Ireland, in 1969. In 1975 he received his Diploma in Prosthodontics from the University of South Carolina. In July last, Dr. MacEntee was awarded his PhD degree from the University of Dublin (Trinity College) Ireland. His field of research was "the relationship between dentists, denturists and the oral health of

elderly people".

Dr. MacEntee conducted a general dentistry practice in Northern Ireland from 1969 to 1971. He then moved to Canada and in 1972 served as Dental Officer in the Pedodontic Clinic for the Manitoba Provincial Dental Health Service. He conducted a general dentistry practice in Winnipeg in 1972-73, just prior to pursuing specialty training in prosthodontics at the University of South Carolina. He was first appointed to the Faculty of Dentistry at the University of British Columbia in 1975 as Assistant Professor.

Dr. MacEntee has served since 1986 as Examiner in Prosthodontics for the Royal College of Dentists of Canada. He conducts a part-time private practice limited to prosthodontics, in Vancouver.

Public Health



Donald W. Lewis, DDS, DDPH, MScD, FRCD(c) is Professor of Community Dentistry and Director of Dental Care Services and Epidemiology Research Unit, Faculty of Dentistry, University of Toronto. His research interests are in the fields of epidemiology, clinical epidemiology and clinical trials in dentistry; dental resource planning; biocompatibility of dental materials in practice and dental care services research.

Dr. Lewis' research consultancies and positions include: Medical Research Council Visiting Professor, 1980, 1984, 1986; WHO Fellowships (PAHO), re: Cuba (1977) and The Bahamas (1983); Canadian Fund for Dental Education Fellowship re: Clinical Epidemiology (1986-87); Consultant to British Columbia, Saskatchewan, Ontario and the City of Toronto governments and to the National

Institute for Dental Research (Bethesda, Maryland), the American Public Health Association, the Canadian Dental Association and the Robert Wood Johnson Foundation. Dr. Lewis' papers and reports have been widely published. Fifty-three journal manuscripts and 30 research reports have been added to the professional literature.

Latvian dentists in the 1990s: A born-again profession?

By Dr. Kira Obrazcova
Ottawa, Ontario.

I recently had the interesting experience of attending the First International Congress of Latvian Physicians and Dentists in Riga, Latvia, June 18-27. The conference was intended for all members of the healing professions — physicians, dentists, and nurses, and attracted 6,000 delegates from nine different countries. As a Canadian of Latvian origin, I was invited to bring greetings from the Canadian Dental Association.

The very fact that this conference took place is a portentous event not only for the development of the health care professions behind the rapidly rusting Iron Curtain but also for the whole process of "glasnost" and "perestroika" in the Soviet Bloc, which has already attracted so much attention in our press.

Latvia (and also its neighbours — Estonia and Lithuania) saw its independence snuffed out 50 years ago as a result of a secret deal between Hitler and Stalin. Bloody killing fields during the Second World War, they were forcibly annexed and colonized by the Soviets and today they are the only countries that were formerly part of the pre-war League of Nations who have *lost* their independence and are *not* members of the United Nations.

Many Western nations, including Canada, have never recognized the legitimacy of the Soviet occupation. Officially one of 15 theoretically equal "Soviet Socialist Republics" after the war, decisions, at virtually all levels, were made by Moscow.

One area in which these decisions radically changed life in Latvia was the destruction of a Western-style system of medical and dental care that resembled that of its Scandinavian neighbours. Private practice was liquidated, contact with professional developments in the West was cut, and standards of prophylaxis and treatment were allowed to slide. Simultaneously, costly propaganda mills churned out praise for the "free medical and dental care", which unfortunately was usually worth less to the average person than what they had paid.



Dr. Obrazcova poses beside a large noticeboard publicizing the First National Congress of Latvian Physicians and Dentists. The notices, bearing the colorful logo of the Congress, were located in several strategic locations in Riga, the Capital City of Latvia.

Attempts to restore system

Now Latvian doctors and dentists are attempting to resuscitate a system of health care that was once similar to that in Canada. They have deliberately bypassed the official government bureaucracy that treats them as lower-level civil servants and set up an independent Medical Association (which includes dentists) like our own CDA, with a clear activist slant. They are also well aware that a successful escape from government interference will require creating contacts with genuine professional societies in the West, where the ideals of professionalism are still alive. At the same time, they want to establish a distinct international presence to assert their national and professional independence.

One glaring area of backwardness is in the domain of materials and equipment. If the Baltic States achieve any kind of economic independence, here is an area of enormous business opportunity for the Canadian dental supply companies. Everyone there is keen on knowing more about new Canadian dental technologies, materials, and private office management. But above all, they are happy and grateful for the support they have received from a sister professional society. △

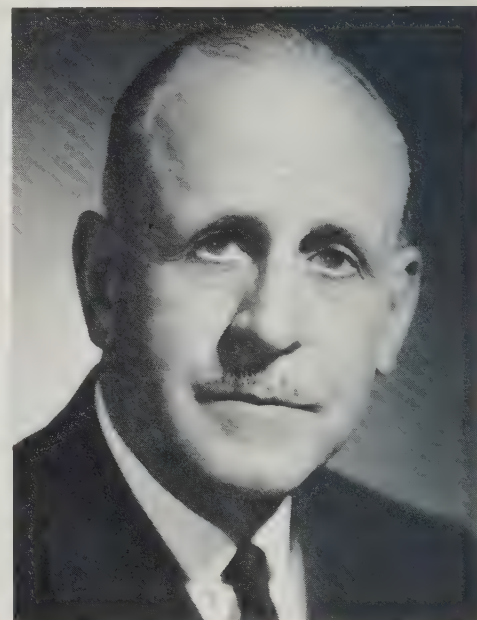
Dr. William Miller

Former CDA President passes in 89th year

Dr. William Miller, who served as President of the Canadian Dental Association in 1962, died recently in North Vancouver in his 89th year.

Born in Australia in 1900, he emigrated to Canada (Vancouver) in 1905. After an unproductive early career in banking, Dr. Miller chose dentistry. He graduated from the North Pacific College, Portland, Oregon, in 1926 and also studied at the University of British Columbia.

He practised dentistry in a suburb of Vancouver for 11 years, and then commenced a downtown practice, which he conducted until 1981.



Dr. William Miller

Dr. Miller was a Past President of the British Columbia Dental Association (1938) and of the College of Dental Surgeons of British Columbia from 1955 to 1957. He also served as an examiner for the College of Dental Surgeons of B.C.

His service to Canadian dentistry was recognized by an Honorary Membership from the Canadian Dental Association. He was also a Past President, an Honorary Member and the recipient of the Rondeau Humanitarian Award of the Vancouver and District Dental Society.

Dr. Miller was a member of the American Academy of Gold Foil Operators, a Fellow of the International College of Dentists and a member of the Omicron Kappa Upsilon Dental Honor Fraternity. △

CFDE — and Target Three Million

Even in these days of instant wealth for lottery winners, a million is still a lot of money.

Since its inception in 1962, The Canadian Fund for Dental Education has provided well over \$2,000,000 for the benefit of dental students, dental schools, practicing dentists, dental research, dental auxiliaries, and perhaps most important of all — the public, to ensure that Canadians continue to receive the best dental health care available anywhere.

Where did the \$2,000,000 come from? Support funds are received from dental trade, foundations, dental auxiliaries, interested individuals, dental organizations and personal gifts from dentists. Obviously the most important contributions are those from dentists.

Fortunately each year a rapidly increasing number of dentists recognize the leadership role they must play if CFDE (their Fund) is to realize its full potential for advancing dentistry. They do so by digging into their own pockets for a contribution — sometimes small, sometimes large — but *always* a tangible endorsement of the Fund's programs. And that's what counts for CFDE.

Of course, there are many reasons why dentists in all parts of Canada personally support the Fund's programs. Here are some that we would like to share with you:

Why dentists support fund

"I have been a contributor to CFDE over the past 25 years that I have been in private practice and never fully understood where the funds were being allocated. After attending the STI/SMI course this summer, I can say that the funds were well spent on this program! My understanding of the dental education process is greatly enhanced and I feel confident in going into a teaching career now. I hope CFDE will continue to fund programs of this calibre in the future.

"No question about it, dentistry has been good to me and I've an obligation to put something back in".

A comment from a recent CFDE award recipient:

"This award is very much appreciated and will certainly help me with my financial commitments while participating in scholastic activities.

It is a real thrill to win an award for



Dr. T.E.M. Ramage

doing something that one enjoys and feels fortunate to be involved with. Dentistry has always been a career that I dreamed of and aspired to. Thank you for making this last year of schooling even more rewarding."

A note received from the dean of a dental school:

"The demands upon the University for expansion of its services, research and teaching place an ever increasing strain on its resources. Your willingness to assist the University in its attempt to meet these challenges is important to us. The demonstration of commitment and generosity, especially in these difficult times, is genuinely appreciated."

Many dentists honour the memory of a deceased classmate, friend or relative with a gift to CFDE's living Memorial Fund. Another very thoughtful gesture is to remember a special occasion or event with a tribute gift to the Fund. In both these cases CFDE forwards a memorial or tribute card on behalf of the contributor.

And how about the young dentist who called at the CFDE office to hand over a personal cheque for \$1,000. When asked what prompted this generous gift, he said: "When I was attending dental school, money was really tight. So tight that unless I earned enough during the summer, I couldn't complete my education. Friends in the dental school helped me get a summer job and I graduated. Now I've been practicing for several years, it's my turn to help someone else".

There are many other reasons for supporting CFDE that we know of. Giving to any worthwhile cause is such a personal thing that undoubtedly there are lots of other reasons why dentists send a contribution to CFDE.

We hope you think of one in **October — CFDE Month.** △

T.E.M. Ramage
Chairman, Board of Trustees
Canadian Fund for Dental Education

CFDE/Warner Lambert offer two teacher fellowships in 90/91

The Canadian Fund for Dental Education while again offering a fellowship for an existent university dental teacher, will now also offer a separate fellowship for a dental hygiene teacher. These awards are made possible by the support of Warner-Lambert Canada Inc, each valued at \$2,500.

The purpose of these awards is to provide an opportunity for an established teacher in one of the Canadian schools of dentistry or dental hygiene to refresh and extend his/her knowledge in any field of dental/hygiene education or research.

Candidates must be full-time members of the teaching staff of one of the Canadian schools of dentistry/dental hygiene with a minimum of five years university or community college teaching experience. The proposed program of study must be defined and well organized to ensure benefit to the individual and his/her dental school, and, minimally it must be of approximately one month's duration. Conventions and the like will not be considered as appropriate programs of study within the terms of each of these awards.

Candidates may apply by forwarding a curriculum vitae and the outline of the proposed program of study, along with a supporting letter from his/her dean or other appropriate senior university or community college senior official indicating approval of the study period and its benefits to the university and the individual staff member. The deadline for filing an application is March 1, 1990.

Additional information can be obtained from the Canadian Fund for Dental Education. △

Dalhousie professor credits CFDE program for teaching honor

Jack Gerrow, 33, newly-promoted Professor and Head of the Division of Removable Prosthodontics at Dalhousie University's dental school, won a coveted honor this year — the Dalhousie Alumni Award for Teaching Excellence. And he gives credit to the Canadian Fund for Dental Education for the development of his teaching skills.

Dr. Gerrow wrote to Dr. T.E.M. (Ted) Ramage, CFDE Chairman, recently, stating the award was "a direct result of the experience I gained during CFDE-funded activities."

He told Dr. Ramage that "the CFDE has played a large role in my development as a dental educator. I was the recipient of a CFDE fellowship during my graduate training from 1983 to 1985 at the University of Iowa. In the summer of 1986, I participated in the ACFD/CFDE Summer Teaching Institute. It was during this Institute (session) that I gained most of the practical teaching skills that resulted in the changes to the educational methods used in my courses here at Dalhousie. Last summer I was also able to participate in the Summer Management Institute, which was an incredibly valuable experience. In addition, CFDE funds distributed through the MacLachlan Foundation, have been most useful in advancing not only my career, but other faculty members' careers in Removable Prosthodontics here at Dalhousie. In particular, the MacLachlan Teaching Conference on Pre-clinical Prosthodontic Education last June was very beneficial in developing teaching skills."

He pointed out that this is the first time the annual Teaching Excellence Award has been given to a teacher in a professional faculty at Dalhousie. "As a result", Dr. Gerrow said, "the University administration has become very aware of the quality of our teaching program at the Faculty of Dentistry".

The students who nominated Dr. Gerrow for the Award described him as "innovative, a concerned professional with an innate ability to put himself in a student's shoes."

He gives a lot of credit to the people who have encouraged and supported the changes at Dalhousie dental school. He noted that normally "there's a lot of reluctance to change at a university, but", he said, "the Dean and others have been very supportive and cooperative". △

AGD installs five national officers at annual meeting

Warren Lesmeister, DDS, of Memphis, Tennessee, was installed as President of the Academy of General Dentistry at its 37th annual meeting in New York City.

Light the Torch of Learning was the theme of the meeting of the Academy which is the second largest dental organization in North America and is composed of about 30,000 dentists in Canada and the United States. It is dedicated to continued education in general practice.

Dr. Lesmeister graduated from the University of Tennessee College of Dentistry in 1963, and became a Fellow in the Academy in 1980.

On the constituent level, Dr. Lesmeister has served as Editor of the Tennessee AGD award-winning newsletter, *The Volunteer Dentist*, and as president, secretary-treasurer, public information

officer, membership chairman and continuing dental education program chairman.

In addition to being a Fellow of the Academy, Dr. Lesmeister is a Fellow of the International Society of Craniomandibular Orthopedics, the Academy of Dentistry International, and the New York Society of Physiology and Occlusion.

Other senior officers

Other senior officers of the AGD installed at the New York meeting were: Henry Finger, DDS, of Medford, New Jersey, as President-Elect; Ludwig Leibsohn, DDS, Merrick, New York, as Vice-President; F. William Towner, DDS, of Elgin, Illinois, as Secretary, and Michael Weisenfeld, DDS, of Farmington Hills, Michigan, as Speaker of the House. △

CDA Retirement Savings Plan

Unit values: (Funds are valued weekly)

Fund	Unit values as at	
	August 31, 1989	July 31, 1989
Bond & Mortgage Fund	69.41699	69.12343
Common Stock Fund	17.50947	17.26959
Money Market Fund	46.02547	45.55787
Balanced Fund	30.05605	29.85077

G.I.C. Fund Term	*Interest rates as at	
	August 31, 1989	July 31, 1989
1 yr	10.85%	10.85%
2 yr	10.60%	10.60%
3 yr	10.35%	10.40%
4 yr	10.20%	10.10%
5 yr	10.20%	10.10%

(*rates subject to change without notice.)

Total Assets (Market value) of the Plan as of:

August 31, 1989	July 31, 1989
\$116,772,491	\$115,817,688

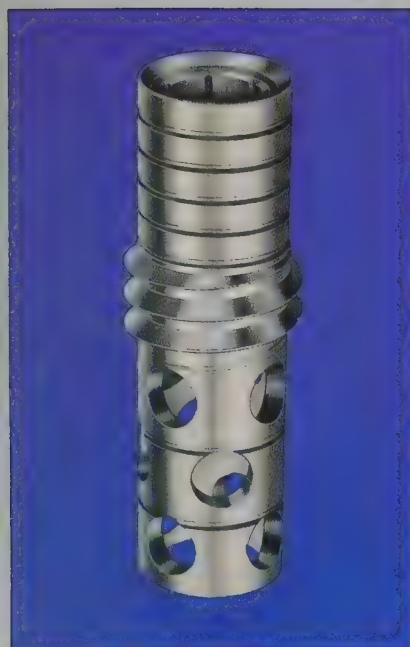
For further information:

Write:
 **CDSPI**
 Retirement Services Dept.
 Suite 600
 2 Lansing Square
 Willowdale, Ontario
 M2J 4Z3

or phone, toll-free:
 Western and Atlantic Canada
 and Ontario Area Code 807
 only 1-800-268-5418
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Toronto

October 20-21, 1989
December 1-2, 1989

Two-day Surgical/Prosthetic Course

- Full Tuition Rebate
- Two Hands-on Sessions
- Second Day Prosthetic Option

TUITION

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Council on Dental Materials, Instruments and Equipment
American Dental Association

If you don't believe the would you believe

I earn my living writing advertising. And as I happily prepared to write this ad with a litany of cute expressions, catch phrases and the odd pun or two, you can imagine my horror when I was handed an oppressive stack of research results regarding the benefits of oral irrigation using a Water Pik Dental System.

Frankly, it's not something everyone wants to read about, let alone write about. Gingivitis. Pockets. Subgingival access. But if anyone understands the importance of these things, you do. And far better than I.

So, I had no alternative but to use this research. Now, I've done my best to make this material readable but I'm not making any promises. Yet as much as I hate to admit it, these findings seem to be far more compelling than any ad I could write.

The purpose of this comprehensive study was to demonstrate the benefit of Water Pik Oral Irrigation on gingival health by measuring effects on clinical parameters and marginal and subgingival microflora.

Treatment groups, adjunctive to normal oral hygiene were compared over six (6) months:

- Group I daily irrigation with 300 mL water, then 200 mL 0.06% Chlorhexidine
- Group II daily irrigation with 500 mL of water
- Group III twice-daily rinse with 0.12% CHX (positive control)
- Group IV toothbrush (negative control)

Patients were randomly assigned and balanced by age and gender.

Enhancement of Gingival Health by Oral Irrigation with Chlorhexidine.

3-MONTH RESULTS

M.G. Newman, T. Flemmig, F. Doherty, et al. (UCLA School of Dentistry)

Study Summary: A double-blind study of 187 patients assessed the improvement of gingival health and reduction in disease-associated bacteria by oral irrigation. (Water Pik).

At 3 months compared to negative control, the group I) irrigating with 0.06% CHX had statistically significant ($P \leq 0.01$) reductions in GI (46.3%), GI Bleeding (53.7%), BOP (39.8%), plaque (50.9%) and pocket depth (5.5%). Water irrigation alone significantly reduced GI (30.0%), GI Bleeding (44.9%) and BOP (24.6%) but did not significantly reduce plaque (2.4%) or pocket depth (0.5%). Compared to positive rinse control, irrigation with 0.06% CHX was significantly better for GI (60.0%), GI Bleeding (88%), BOP (221%) and pocket depth, and also better for plaque and GI than water alone. CHX rinse was effective relative to negative control. Groups using CH had significant reduction in "Actinomyces"; CHX irrigation group had significant reductions in Gram negative facultative rods. Presented 1988 IADR

Continental European Division. Louven, Belgium.

Results:

I. Despite minimal effect on supragingival plaque, water irrigation benefits are significant (compared to normal oral hygiene):

• Reduction in gingival inflammation (-30.0%)

• Reduction in gingival bleeding (-44.9%)

• Reduction in Bleeding on Probing (-24.6%)

2. Irrigation delivery enhances the chemical effect of chlorhexidine over rinsing with it:

- Irrigating once per day with water then 0.06% chlorhexidine markedly enhanced improvement in gingival health.
- Irrigation with dilute chlorhexidine significantly reduced Actinomyces bacteria associated with gingivitis.

Chlorhexidine and Irrigation in Gingivitis: 6 months Correlative Clinical and Microbiological Findings.

6-MONTH RESULTS

T.F. Flemmig, M.G. Newman, S. Nachnani, et al. (UCLA, Los Angeles)

Study Summary: The objective was to evaluate the effect of irrigation with water or chlorhexidine (CHX) on gingival health and plaque microflora of 175 patients with naturally-occurring gingivitis. In this positive-negative controlled, examiner-blind study, 165 marginal/subgingival plaque samples were taken from 88 of the patients completing the 6 month trial. Microbiological analyses were performed using selective and non-selective culture methods.

Results: At 6 months, daily

advertising for Water Pik[®], the research?

irrigation with water then 0.06% CHX (Group I) significantly reduced mean gingival inflammation by 42.5%. Bleeding on Probing by 35.4% and the total Colony-Forming Units of Gram negative anaerobic rods ($P \leq 0.02$) compared to toothbrush control. With 0.12% CHX rinse, mean gingival inflammation was reduced 24.1% and BOP by 15.0%. For both CHX irrigation and rinse groups, the Calculus Index was significantly increased while plaque was significantly reduced.

Daily water irrigation significantly reduced mean gingival inflammation by 23.1% and BOP by 24.0% at 6 months. There was no increase in supragingival plaque compared to Group IV.

In the small percentage of sites initially $>4\text{mm}$, GI was significantly reduced only by water irrigation (55.2%) and BOP only by CHX irrigation (38.2%) when compared to toothbrush control.

In the following tables, for sites with initial pocket probing depth $\leq 4\text{mm}$, GI and BOP were significantly reduced by all treatment groups; Group I irrigation was most effective in reducing BOP. ($P \leq 0.05$)

6 MONTH REDUCTION BLEEDING ON PROBING		
Adjunctive to toothbrushing		
Group I	CHX Irrigation	36.6%
Group II	Water Irrigation	26.0%
Group III	CHX Rinse	15.9%
Group IV	Toothbrush Control Comparison	

Presented 3/18/89 AADR.
San Francisco.

Effects of 6 Month 0.06% Chlorhexidine Gluconate Irrigation on Plaque Microflora

6-MONTH RESULTS

S. Nachnani, M. Newman, T. Flemmig,
et al. (UCLA School of Dentistry,
Los Angeles)

Study Summary: This study documents the bacteriologic effects on marginal and sub-gingival plaque in gingivitis patients who participated in a 6-month, positive/negative controlled, examiner-blind study. Curette plaque samples from sites in each of the four test groups were characterized using selective and non-selective culturing methods.

Results: At baseline, all patients harboured plaque microflora typical of naturally-occurring gingivitis. Only at 3 months were *Actinomyces* significantly reduced by CHX irrigation and rinse; at 6 months no significant differences were apparent, but the numbers of Colony-Forming Units were reduced for both CHX rinse and irrigations groups.

All treatment groups reduced CFU and proportions of black pigmented *Bacteroides* at 6 months.

Furthermore, CFU and percent of Gram negative anaerobic rods were significantly reduced at 6 months by irrigation with CHX.

At 6 months, the CFU of streptococci were similar for all four Groups.

Presented 3/19/89 AADR.
San Francisco.

Naturally, we think you should recommend the Water Pik Dental System to your patients. After all, the research shows the Water Pik Dental System to be effective in the enhancement of gingival health. Now we just have to see about the advertising.

For more information please write to:
Teledyne Water Pik Canada, 82 Carrier
Drive, Rexdale, Ontario, M9W 5R1.

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DENTAL SYSTEMS

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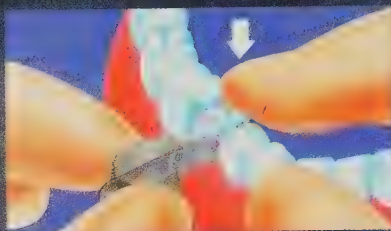
6 MONTH REDUCTION GINGIVAL INDEX		
Adjunctive to toothbrushing		
Group I	CHX Irrigation	48.0%
Group II	Water Irrigation	38.0%
Group III	CHX Rinse	28.7%
Group IV	Toothbrush Control Comparison	

The matrix revolution: Cure-Thru® Squeeze Matrix System

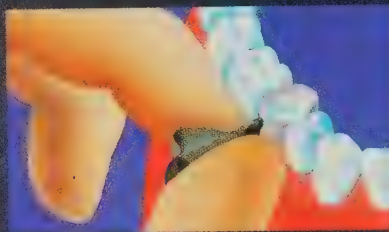
The preformed special matrix with an integrated fixation device for posterior composite fillings and composite inlays.



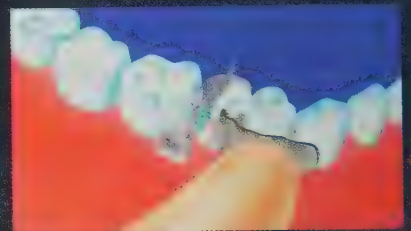
Due to the weight of a normal matrix band holder, and the tendency to overtighten, the transparent matrix may well distort.



1. A Squeeze Matrix is placed in the right position.



2. Pressing the metal ring together.



3. Insertion of the Cure Thru® Wedge. Bending the compressed metal ring.

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Dr. John C. Rooney of Moncton was elected President of the New Brunswick Dental Society at the annual meeting held in St. Andrews, N.B.

Dr. Paul Castonguay of Grand Falls, was named Vice President. Dr. Donald E. Williams, of Moncton, is the Past President.

Dr. D.C. Steeves of Moncton, received an Honorary Membership in the NB Society and Life Memberships were given to Drs. C.B. Allaby and Stuart Geddes of Moncton and Hazen Cummings, of Saint John. Dr. J.E. Alain of Bathurst was given a special award for dedicated service.

In its business sessions, the Society endorsed the fluoride rinse program carried out in that province's public schools by the Department of Health and lauded the Saint John city council for its decision to fluoridate that community's water supply.

Almost half of New Brunswick's dentists attended the meeting making it the largest annual meeting in the Society's 99-year history. Δ



A recent graduate of the School of Dental Medicine, Laval University, Martine Chamberland, was the 1989 recipient of the Canadian Dental Association's President's Prize.

This outstanding dental student was awarded a cheque for \$250 and a parchment.

The photograph shows Dr. Chamberland, left, receiving the award from the Director of the School of Dental Medicine at Laval, Dr. Jean-Yves Turcotte, at the Laval Convocation June 9, last. Δ

HCDRA



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1988

Communication Programs - Educational
First Place



IICDRA



Excellence in Health Care Communication

1988

Communication Programs - Educational
Second Place



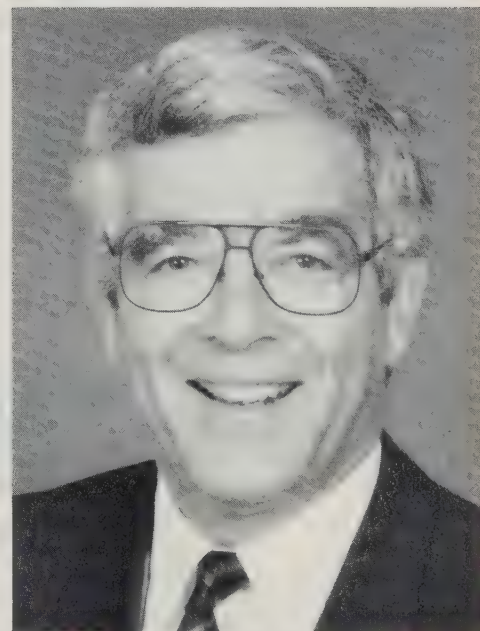
The Canadian Dental Association's public communication programs in the interests of better dental health have won recognition from a national public relations body. The Health Care Public Relations Association, Canada, presented not one, but two, honors to CDA's Communication Department. The Hygeia Award, First Place for 1988 Communication Programs — Educational, was for CDA's "First Teeth" program. The Hygeia Award, Second Place, for 1988 Communication programs, was given for the CDA's "5-Point Prevention Plan" program.

Franklin Pulver, DDS, MS, FRCD(c), FICD, of Toronto, was recently elected President of the International Association of Dentistry for Children. He assumed office at the 12th IADC Congress, held in Athens, Greece, in June.

The Association, which is a constituent society of the Fédération Dentaire Internationale, is dedicated to bringing awareness of childrens' dental health to countries throughout the world.

Also elected were: Dr. E. Ben-Zur of Zurich, Switzerland, as President-Elect; Dr. M. Hector of London, England, as Secretary-Treasurer and Dr. Barry Scheer, also of London, England, as Editor.

The Association will hold its 13th Congress in Kyoto, Japan, October 1-5, 1991 and its 14th Congress in Dubrovnik, Jugoslavia, in 1993. Δ



Dr. Franklin Pulver

Anesthesia for the Pediatric Patient

L'anesthésie pour le patient pédiatrique

1. Canfield, D.W. and others. "Over-sedation in a pediatric patient: case report." *Pediatric Dentistry*. Sept. 1987; 9(3) pp. 229-31.
2. Creedon, R.L. "Guidelines for the elective use of conscious sedation, deep sedation, and general anesthesia in pediatric patients." *Anesthesia Progress*. Jul.-Aug. 1986; 33(4) pp. 189-90.
3. Doyle, K.A. and Goepferd, S.J. "An allergy to local anesthetics? The consequences of a misdiagnosis." *ASDC Journal of Dentistry for Children*. Mar.-Apr. 1989; 56(2) pp. 103-6.
4. Frassica, J.J. and Miller, E.C. "Anesthesia management in pediatric and special needs patients undergoing dental and oral surgery." *International Anesthesiology Clinics*. Summer 1989; 27(2) pp. 109-15.
5. George, M. "Premedication in the pediatric patient." *New York State Dental Journal*. Feb. 1986; 52(2) pp. 28-9.
6. Havelock, R.B. and others. "Management of the small child with gross caries." *British Dental Journal*. Feb. 25, 1989; 166(4) pp. 110.
7. Henderson, J.M. and others. "Pre-induction of anesthesia in pediatric patients with nasally administered sufentanil." *Anesthesiology*. May 1988; 68(5) pp. 671-75.
8. Jones, J.E. and others. "Incidence and indications for surgical management of phenytoin-induced gingival overgrowth in a cerebral palsy population." *Journal of Oral and Maxillofacial Surgery*. May 1988; 46(5) pp. 385-90.
9. Moore, P.A. "Pain control in dentistry: pediatric pharmacosedation."

Compendium. Jan. 1987; 8(1) pp. 28, 30-6, 38-9.

10. Moore, P.A. "Local anesthesia and narcotic drug interaction in pediatric dentistry." *Anesthesia Progress*. Jan.-Feb. 1988; 35(1) pp. 17.

One copy of the above package of articles is available for \$5.00 to all CDA members and for \$10.00 to non-members. (Ontario residents, please include 8% sales tax.)

LIBRARY SERVICES

As a convenience to all CDA members in the various time zones in Canada, it is now possible to call the CDA Library, between 4:30 pm and 8:30 am Ottawa time, in addition to during regular library hours (8:30-4:30 EST)

After hours: (613) 523-5482

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FAX: 613-523-7736

Les membres de l'ADC peuvent obtenir pour 5\$ et les non membres pour 10\$ une copie des articles de la bibliographie ci-dessus.

SERVICES DE BIBLIOTHÈQUE

Pour mieux servir les membres de l'ADC habitant dans les différentes zones horaires du Canada, la Bibliothèque de l'ADC dispose maintenant d'un service téléphonique de 16h30 à 8h30, heure d'Ottawa, en plus des heures ordinaires (de 8h30 à 16h30, HNE).

En dehors des heures ordinaires:

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1-800-267-6354 (l'Ouest du Canada et la région dont le code est 709)

1-800-267-6364 (l'Est du Canada, sauf la région dont le code est 709)

Programme informatique

Envoy: CDN.DENTAL.LIB

FAX: (613) 523-7736

11. Needleman, H.L. "Conscious sedation for pediatric outpatient dental procedures." *International Anesthesiology Clinics*. Summer 1989; 27(2) pp. 102-8.
12. Nelson, L.P. "Nitrous oxide as a potential health hazard in pediatric dentistry: protocol." *Pediatric Dentistry*. Sept. 1987; 9(3) pp. 250-1.
13. Niall, C.T. and others. "Preanesthetic sedation of preschool children using intranasal midazolam." *Anesthesiology*. Dec. 1988; 69(6) pp. 972-75.
14. Parbrook, G.D. "Arterial oxygen saturation during general anaesthesia for dental extraction in children." *Anaesthesia*. Jan. 1988; 43(1) pp. 67.
15. Puttick, N. and Rosen, M. "Propofol induction and maintenance with nitrous oxide in paediatric outpatient dental anaesthesia. A comparison with thiopentone-nitrous oxide-halothane." *Anaesthesia*. Aug. 1988; 43(8) pp. 464-9.
16. Sampaio, M.M. and others. "Changes in oxygen saturation during inhalation induction of anaesthesia in children." *British Journal of Anaesthesia*. Feb. 1989; 62(2) pp. 199-201.
17. Waggoner, W.F. "Conscious sedation in predoctoral pediatric dentistry programs." *Journal of Dental Education*. Apr. 1986; 50(4) pp. 225-9.
18. Whitehead, B.G. and others. "Monitoring of sedated pediatric dental patients." *ASDC Journal of Dentistry for Children*. Sept.-Oct. 1988; 55(5) pp. 329-33.
19. Wright, G.Z. and Chiasson, R.C. "The use of sedation agents by Canadian pediatric dentists." *Pediatric Dentistry*. Dec. 1987; 9(4) pp. 308-11.
20. Young, E.R. and Bosco, D. "The use of pulse oximetry in the immediate recovery phase following dental extractions under general anesthesia in children." *Canadian Dental Association Journal*. Apr. 1988; 55(4) pp. 305-8.

Keep Smiling



CANADIAN DENTAL ASSOCIATION

Five Reasons to Use The Five Point Prevention Plan in Your Practice

Since 1988, the CDA's Five Point Prevention Plan has been teaching Canadians about the importance of preventive dental care. Through posters, buttons, balloons, and two dental supplements, millions of Canadians have been introduced to its five easy to remember points — don't rush your brush; clean between; eat, drink and be wary; check your gums; don't wait until it hurts.

This recipe for good dental health has already proven to be an effective and powerful communications tool. Why not put it to work in your practice? △

1. Open the lines of communication

Wear a t-shirt emblazoned with "LET'S TALK ABOUT THE FIVE POINT PREVENTION PLAN" or CDA's "Keep Smiling" T-shirt and display this message in big letters on your bulletin board, on your office door, your receptionist's desk. Such a display might pique patient curiosity — both those unaware of the plan and those familiar with it but unsure of specific details — and motivate them to ask for information. Of course, you don't have to wait to be asked. You can initiate discussion by saying "don't you want to know about the message on my shirt?"

2. Re-inforce the Good for Life message

Once the lines have been opened, you and the patient can go through the plan point by point, discussing your respective roles in preventive dental care, and

Some Tips on Effective Talking

- As much as possible, conduct lengthy discussions at eye level. Patients may find it disconcerting and intimidating to engage in conversation while they're lying down.
- Make eye contact frequently. This helps establish a connection between you and your patient and may also help put you both at ease.
- Say the patient's name occasionally during the course of the discussion. This also helps to break the ice and build rapport.
- Slow down. You're probably talking much faster than you think you are. Information is much easier to absorb when the person conveying it speaks slowly and clearly.

stressing the team effort required to keep teeth good for life. This may afford the perfect opportunity to demonstrate proper brushing and flossing techniques, answer patients' questions and address any concerns.

3. Pave the way for future discussions

Showing the patient that you are knowledgeable and approachable and a source

of information may encourage dialogue to continue in the future.

4. Build dental team/patient rapport

Taking time to discuss the plan demonstrates that you are a professional who takes time — to care about the patient's dental health, to communicate the importance of maintaining it. This goes a long way to building rapport dental team/patient rapport.

5. Foster the good will and encourage the return of first-time patients

First time patients are potentially lifetime patients. Discussing the Five Point Plan during a patient's first preventive visit may give them incentive to return. To further show your interest, you might even make them up a Five Point Prevention Plan Package. The package — which can be wrapped in florists' cellophane and tied with a ribbon — can consist of the following items (which you may want to tag with the appropriate prevention point): toothbrush and 3-minute timer ("don't rush your brush"); dental floss ("clean between"); small pocket mirror ("check your gums"); sugarless gum ("eat, drink and be wary"); a piece of string tied in a bow or a small calendar (don't wait until it hurts"). You might also want to include a copy of the plan, a "Keep Smiling" button, balloon, or bumper sticker — items that can be ordered from the CDA. △

The DAP Advisor offers information, ideas and advice to improve dentist/patient communication, raise awareness about good dental health, and help your practice become busier.

ORAL AND MAXILLOFACIAL INFECTIONS SECOND EDITION

Richard G. Topazian and
Morton H. Goldberg

W.B. Saunders Co. Philadelphia, Pa. 1987
pp. 473 and B&W illustrations

I like books that deliver the goods. Authors who promise all sorts of goodies in the introduction only to fall miserably short of their stated objectives tend to drive me back to reruns of Star Trek. The only group of people who disappoint more depressingly are book reviewers who misrepresent the volume they are writing about. Hopefully, this reviewer won't disappoint anyone, because he feels this text is terrific.

In the 1981 first edition, the authors stated their desire to write a book that "provide(s) in one book, a comprehensive view of contemporary aspects of infections of the jaws." The work they published at that time, attained these goals admirably and it was recognized by the professional community appropriately.

Six years later, cognizant of significant changes, discoveries and modifications that have continued to bedevil health care in the Eighties, these gentlemen updated the content accordingly, keeping in mind the needs of practitioner and academic alike.

This edition is not significantly longer than its predecessor, but the number of chapters has increased. A previously bulky chapter on oral manifestations of systemic infectious diseases has been replaced with a series of chapters using microbiologic agents as the classifying prerequisite. Predictably, a separate chapter on Hepatitis and Acquired Immune Deficiency Syndrome has been added. Unfortunately, the publication predated the introduction of attenuated virus vaccine prophylaxis. A similar complaint regarding the absence of discussion of current agents being used in the management of AIDS patients only reinforces the frustration of trying to maintain a "state of the art" reference.

In tune with the current "hands on" philosophy of most North American Hospital Imaging Services (we old guys use to call them the X-ray Departments!), there is a chapter on current imaging techniques available for managing infections of the head and neck. Specific sections on Ultrasonography and Magnetic Resonance Imaging show the application

of nonionizing radiation modalities where specific information can be obtained with minimally threatening, sophisticated technology.

A book merely about bugs and antibiotics would be devastatingly boring, and ultimately useless because of the disuse as a reference guide that it would encourage. This text, on the other hand, is informative, well written, intelligently subdivided and extremely well illustrated with various photographs, schematics and tables. A change in type size as well as conversion to a two column format makes reading significantly easier.

At the time of this edition, both authors were professors of Oral and Maxillofacial Surgery at the University of Connecticut. How fortunate for the students of that university's School of Dental Medicine. As potential users of their textbook, we can feel equally fortunate to have such a fine reference at our beck and call.

*This book was reviewed by:
John H. Gryfe, DDS, FRCD(C)
Weston, Ontario*

ATLAS OF PERIODONTAL SURGERY

by Edwin S. Cohen

1988, Lea & Febiger, Philadelphia
235 pages, B&W illustrations

This is a book I wished I had had ten years ago, when I was a graduate student. The Atlas of Periodontal Surgery is a richly illustrated, 235-page book that makes superb resource material for the novice as well as the experienced dental practitioner.

The book starts off with a diagrammatic historical review by way of a concise flow chart that shows the evolution of modern periodontal surgical techniques.

The author and his collaborators then proceed to thoroughly cover all aspects of periodontal surgery starting with the variations of curettage. Included is a very good clarification of the modified Widman technique. This is followed by the full range of mucogingival procedures encompassing gingival grafting, root coverage and flap surgery. The section on osseous surgery explains both resective and inductive techniques with a brief explanation of the different types of grafting materials available. As well, furcation management is given a section to illustrate a variety of treatment modalities.

One of the book's great strengths is that for each specific procedure, the author provides a concise historical background of the technique, as well as indications and contraindications for its use. Follow-up illustrations and photographs are used very effectively to clarify the concepts shown. The quality and size of the pictorials makes them ideal for the learning clinician as well as for patient education.

Since the book concentrates on technique, the discussion on each, is kept concise. The bibliography however, has a generous list of articles which can be investigated by the interested reader.

Considering the excellent quality of the material in this book, I was somewhat disappointed that Dr. Cohen did not include a chapter on suturing. Although he mentions in the text that this topic is well covered in other publications, I feel that a section on this subject would have been a valuable contribution.

This shortcoming aside, I strongly recommend this book as an addition to anyone's library.

*John I. Kershman, DDS
Ottawa, Ontario*

DENTAL MATERIALS AND THEIR CLINICAL APPLICATIONS

by Harold Wilson,
John McLean,
David Brown

1988, British Dental Journal, London
122 pages, colour illustrations, \$22.00 U.S.

If a practitioner were in need of a handy reference manual of current restorative materials, "Dental Materials and Their Clinical Applications" would serve that need very nicely. Its three British authors, well known for their contributions to dental materials, have organized nine succinct chapters on the latest materials and techniques used in clinical practice. This 109 page soft-covered handbook appears to incorporate, under one cover, a series of articles relating to clinical dentistry that were published in the British Dental Journal from March 19 to June 25, 1988. The topics range from basic materials such as amalgam, composites and ceramics to more recent trends in the use of dentin adhesives and glass ionomers. Although no mention of a specific group is made in the preface, this

book is clearly targeted for dental practitioners who may want to have a better understanding of the relevancy between the properties of materials and their clinical impact.

The restorative materials presented in this book generally consist of those which a dentist may use when directly treating patients. Thus, materials integrated with laboratory procedures, such as gypsum, solders or waxes, are not included. Consistent with this approach, there are no chapters on the theoretical aspects of dental materials.

Clearly, this book should not be regarded as a textbook of dental materials inasmuch as the breadth of detail associated with such texts is not present. Rather, the chapters provide a good overview of a subject, as one might expect in a journal article. The material is generally up to date and well documented. However, there are certain key statements in each of the chapters which were not annotated. I would have preferred to see them referenced, as otherwise, these statements appear to be more opinion than fact.

Most of the subject matter is well suited to dental practice in North America. However, there are several concepts which have not achieved recognition as standard practice here. These particularly relate to some of the applications of glass ionomer cements such as the restoration of minimal preparation occlusal cavities with glass ionomers or its use in conjunction with the "tunnel preparation". The latter, suggested as a means of managing Class II lesions, is particularly inappropriate for this purpose. Other than these indiscretions, the book is worth obtaining.

*Ivan Stangel, DMD, FADM
Faculty of Dentistry
McGill University
Montreal, Que.*

HARTLAND'S MEDICAL AND DENTAL HYPNOSIS — 3RD EDITION

David Waxman

*Bailliere Tindall Publishing
London, England,
3rd Edition, 1989, 501 pages*

Traditional management of the dental patient by pharmacological modalities (local anaesthetics or oral, intramuscular, intravenous and inhalation forms of con-

scious sedation) may not be convenient or desirable. Indeed, these traditional forms of patient management may even be either absolutely or relatively contraindicated for some patients. This book outlines in considerable detail the art and science of psychotherapy and hypnosis which can be used as a sole technique, or as a technique to be used in conjunction with other techniques (including pharmacologic), in managing the dental or medical patient.

This attractive soft cover book is the third Edition of John L. Hartland's original book that was first published more than 20 years ago. Forewords to both the second and third editions are included, which attest to the brilliance and dedication of Dr. Hartland. In this third Edition, Dr. Waxman has added material from his own experiences, wide reading and obvious thoughtfulness, resulting in a very updated edition of the classic and often-quoted original work.

This book is divided into four separate "parts" which aptly describe their contents. These include "The History, Nature and Techniques of Hypnosis, Some Phenomena of Hypnosis, and the Use of Advanced Techniques, The Clinical Applications of Hypnosis" and finally, "Other Uses and Some Abuses of Hypnosis". Each of these four parts is subdivided into a total of 26 chapters, followed by an Appendix which contains guidelines for the beginner in the proper application of hypnosis and the maintenance of ethical status and dignity. The book is concluded with an appropriate Index. For the readers' benefit, this book is directly referenced throughout. The references are listed at the end of each chapter. It, therefore, becomes an excellent and complete textbook on the subjects presented.

This book covers the field in a wide and an in-depth fashion, reflecting the many years of experience and observation by its contributors. The reader is led by its well-organized and "easy-reading" approach from the early history of psychotherapy and hypnosis through to its many applications. A thorough appreciation of the scope and usefulness of the subject matter is certain after one reads this book. A firm basis in the theory and science of the subject matter is coupled with clinical methodology and techniques in the use of psychosedation and hypnosis for a broad range of applications for both the clinical setting and for "life-style" management.

This is an absolutely fascinating book that not only introduces the beginner to psychotherapy and hypnosis, but also reinforces and broadens one's appreciation of this powerful facet of patient management. As well, it discusses techniques and thought processes that can be used for the practitioner's own benefit and well-being. I would strongly recommend this for all members of the dental and medical professions.

*Reviewed by:
Earle R. Young, BSc, DDS, BScD, MSc,
FADSA
Assistant Professor of Anaesthesia
Faculty of Dentistry,
University of Toronto,
and The Wellesley Hospital, Toronto*

Obituaries/Nécrologie

Alexander, Laurie B. A. native of Vancouver, Dr. Alexander conducted a long time dental practice in Maple Ridge, British Columbia (1940 to 1973). He was in his 85th year.

Mesplier, Eric. A native of France, Dr. Mesplier graduated in dentistry from the University of British Columbia in 1973. He practised in Vancouver.

Otto, Wolfgang G.W. A native of West Germany, Dr. Otto graduated in dentistry from the University of Alberta, in 1958. He practised dentistry in Vancouver.

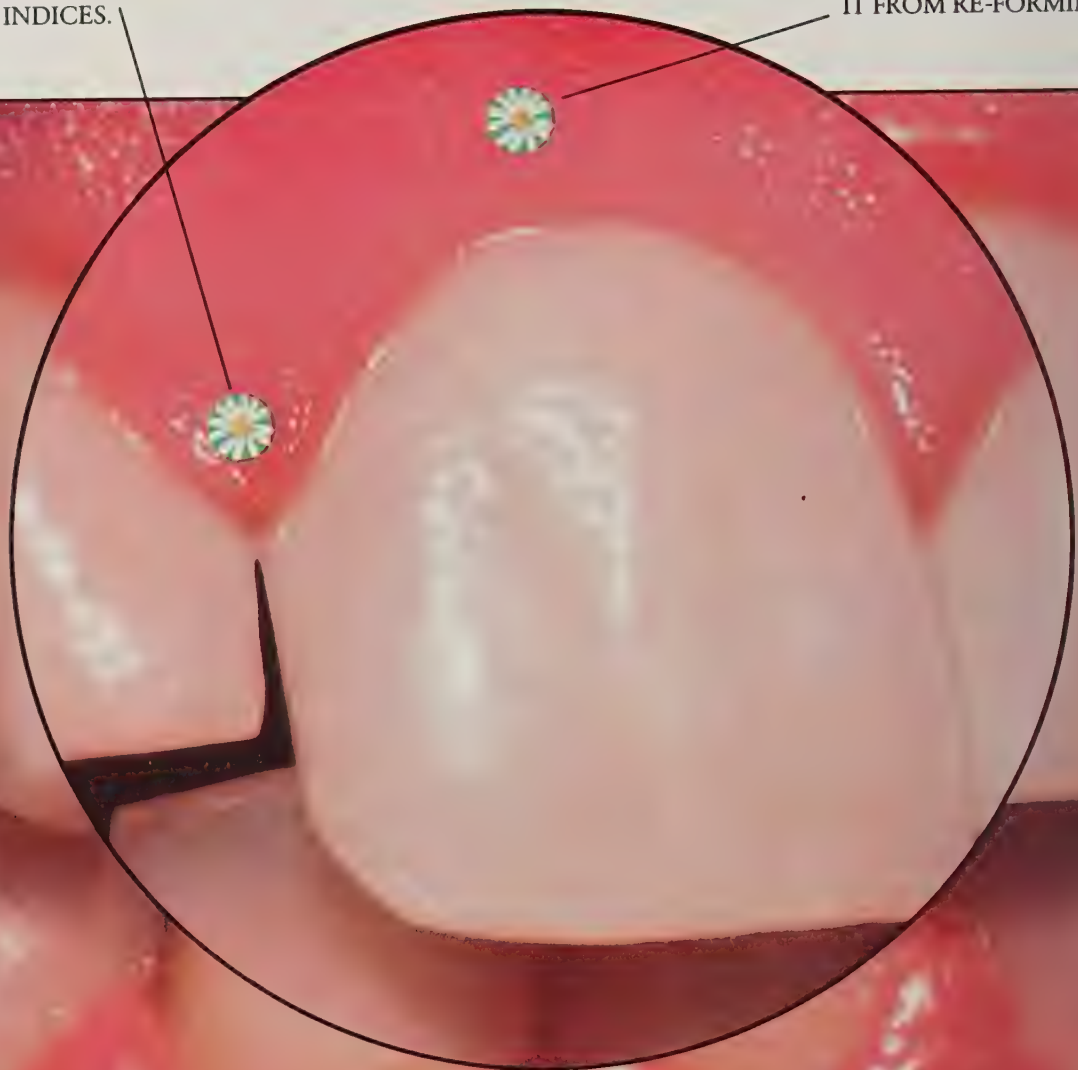
Robinson, William. A graduate in dentistry from the University of Toronto, in 1949, Dr. Robinson practised in London, Ontario. He was a Life Member of the Canadian Dental Association.

Short, Harvey. Dr. Short, 71, was the victim of an automobile accident in July. He was a graduate in dentistry from the University of Alberta, in 1943. He practised in Winnipeg for more than 20 years, then moved to Toronto, where he received his Diploma in Public Health Dentistry, in 1967. He returned to Winnipeg and served for many years as Regional Dental Director with the Province of Manitoba's Department of Public Health.

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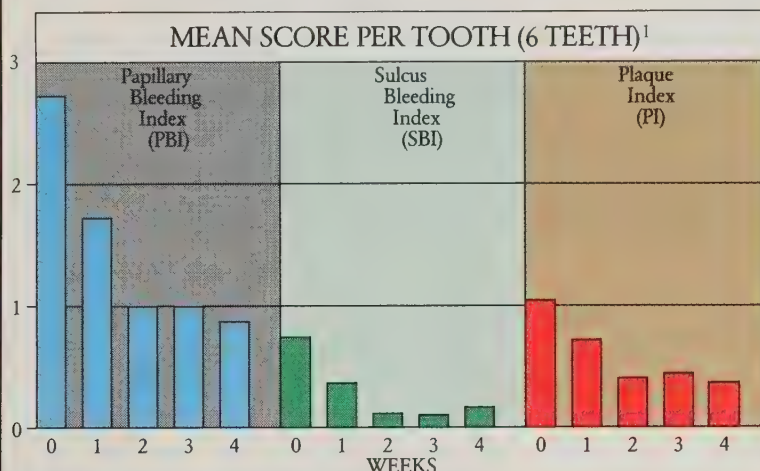
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Klewansky, P. and Vernier, D. Sanguinaria and the control of plaque in dental practice. Compendium of Continuing Education in Dentistry. Supp. 5, S94-97, 1984. Data on file.

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Porcelain today — A whole new world of possibilities

By H.J. (Hyo) Maier, RDT

Over the past 50 years, dental materials have changed remarkably. Perhaps the most fascinating of these changes is the evolution of porcelain from a simple veneering material over metal to the basis for a full range of application possibilities in cosmetic and restorative dentistry. Today, porcelain can be employed for veneers, inlays, onlays, surface build-ups, full crowns and even all-ceramic bridges that eliminate the use of metal entirely.

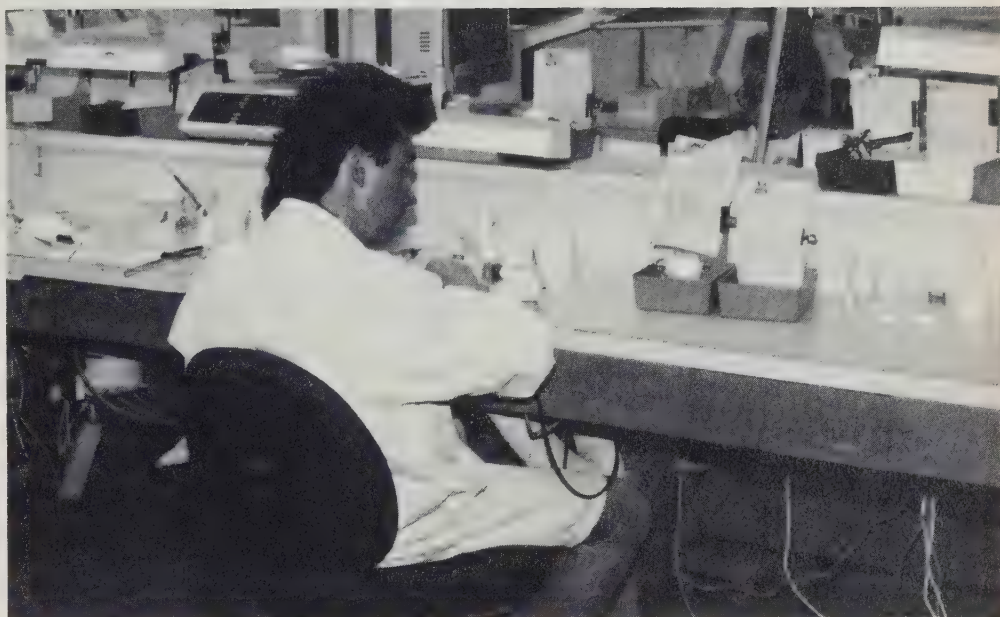
Porcelain itself has always had a number of well-established advantages. For the dentist, the strength and abrasion resistance of the material ensures years of restoration life. Compared to other procedures, far less preparation is usually required conserving more of the healthy tooth. And, porcelain's decreased thermal conductivity ensures reduced sensitivity. For the patient, each of the applications provide more esthetic restorations with natural vitality.

Etching Opens the Door

Interestingly enough, many of the porcelain restoration possibilities available today are not, in themselves, new concepts. For example, the porcelain inlay was described by Gilbert (1906) and LeGro (1929). What was lacking was a reliable bonding method. The advent of etching porcelain with acid preparations to allow micromechanical bonding with composite resin materials ("Etched-porcelain resin-bonding") has opened the door to new esthetic alternative restorative techniques. Let's briefly review a few of these possibilities.

Veneers

The use of porcelain veneers to correct undesirable defects in anterior teeth is well established in most dental practices today. The smooth, stain resistant surface and true-colour fluorescence ensures years of esthetic beauty. This is enhanced by the biocompatibility of the material



that provides excellent gingival response — no irritation or unsightly gum recession.

Inlays/Onlays

Porcelain Inlays/Onlays not only offer a more esthetic solution but also put an end to the sensitivities so commonly caused by metal fillings. A conservative modality, research has shown that porcelain inlays can restore a tooth up to 90 per cent of its original strength — far more than conventional amalgam. And the special lining cement offers lasting marginal integrity while systematically releasing fluoride, making the restoration caries resistant.

The use of porcelain has even extended to specialized procedures as well. For example, a cloned enamel effect can be created by adding porcelain to occlusal surfaces — a valuable addition in the treatment of TMJ patients.

All-Porcelain Bridges

In the past, the use of all ceramic crowns was restricted to single units. Today, advances in porcelain technology allow full bridges constructed entirely of por-

celain — with a strength and longevity approximating that of porcelain fused to metal.

Natural teeth have the ability to transfer light giving them a translucent appearance. With standard crown and bridge, the internal metal substructure prevents light from penetrating, making this effect almost impossible to duplicate. These "metal shadows" create a dull, lifeless appearance.

On the other hand, the internal structure of the all-porcelain bridge actually reflects light much like natural dentition. The result: a more life-like translucence.

In addition, the bridge only requires minimal preparation of the abutment teeth (depending on their condition) for bonding, conserving healthy tooth structure. We have found that an inlay type preparation on the lingual marginal ridge has the best results.

Talk to your laboratory about what can be done with porcelain today — a whole new world of possibilities awaits you. △

Mr. H.J. (Hyo) Maier, RDT is President of Aurum Ceramic/Classic Dental Laboratories Ltd.

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Discretionary Cash — Your Key to Financial Freedom

Our last article dealt with Asset Allocation, the process of diversifying your investments, and thereby spreading the risk between the many market factors that impact on the performance of your investments. But this allocation assumes you've got enough investments to split in the first place. What if you don't have a lot of assets and you don't think you have a lot of something we discussed in the May issue — discretionary income?

Your earning power during your highest income years is your most important asset, but it's so easy to spend all you earn. If you're like most people, you probably tell yourself "I'll save whatever's left over at the end of the month," but then you find there's rarely anything left. It's a common problem. If this is your situation, then you must establish a method to ensure that you have discretionary income available and that you use these funds effectively.

Now is the time to start on a three-step investment program which we've found works very well for our clients. It is based on fundamental cash management techniques.

- 1) The starting point is to clearly define and budget for an investment savings amount you can set aside from your annual cash flow. The amount should be large enough to make the exercise worthwhile, but not so large that it interferes too heavily with your ability to enjoy your lifestyle. The amount should be increased as circumstances permit, and any windfalls or other income should supplement the annual target.
- 2) The next step is to ensure that these funds are available on a monthly basis. Open a special bank account, and each month, before you look after your regular household expenses, deposit 1/12th of the annual amount into this account. (We call this exercise "paying yourself first.")
- 3) Ongoing control of your expenses is a critical part of the process of financial management. Don't leave this step out!

We believe this approach can actually help you find discretionary income when you think you don't have any. Have you ever had to refinance a loan at higher rates than the original terms? You proba-



*Robert M. Paterson, CA, MBA, RFP
Vancouver, B.C.*

bly tightened up your discretionary areas to accommodate the extra payments. We think you may be pleasantly surprised to find that you can live quite nicely on what's left of your income after the investment amount is transferred to your special account.

When any commitments such as loans or mortgages are eliminated, you should continue with those payments each month, but instead of paying them to a creditor, pay yourself. Put the payments straight into your investment savings account, increasing the regular monthly deposits.

The funds in the account should not be withdrawn and used for purposes other than investments. They should be used to build a capital base which is structured on your asset allocation objectives. When a "hot" investment comes your way, first of all, take a step back and determine if the investment fits in with your diversification plans. Then judge the attractiveness of the investment itself. Studies indicate that 80 per cent of the performance of an investment portfolio is based on the percentage of assets in each category; only 20 per cent of the performance is based on the individual assets within those categories. (We outlined the categories in the July issue.)

Okay, let's go back to step one — defining the amount to set aside. Maybe you think you can't possibly save anything. Maybe you just don't know what you spend. If that's the case, keep a detailed

record of your expenses for a few months. When you see your expenses in black and white in front of you, it will help you to analyze your spending patterns objectively and make adjustments in discretionary areas where necessary.

Make it easy on yourself and do as much as you can to simplify your cash management on a monthly basis. There are a number of ways you can do that. For instance, if your expenses fluctuate wildly from month to month, think about setting up averaged payments for major bills, and arrange through your bank to have automatic payments debited from your account.

Or, you can set up an account to hold once-a-year expenses. First of all, determine what the annual costs are for home and auto insurance, property taxes, RRSP contributions, vacation, income tax, and any other major or annual costs. Divide that number by 12 to get the monthly portion of all these expenses. Then transfer this amount each month right into the once-a-year account. In a few months, you'll be right on top of these always unwelcome expenses.

If you're under 40 years of age, you can afford to take a slower, steadier route to acquiring your investment assets. If you're in the over 55 group and you plan on retiring at 60, you've only got a few years left. You may have to tighten up and maximize your income for the next five years.

In other words, the amount you should set aside is determined by:

- your age;
- the investment assets you'll need to support a financially independent lifestyle, (reread The Future section of our May article if you need help in this area);
- the total investment assets you've already acquired; and
- how many years you've got before these investment assets have to work for you. Δ

Robert Paterson is a Chartered Accountant with an MBA from Simon Fraser University. A Registered Financial Planner, he specializes in financial planning for professionals and senior executives.

Susan Dixon, co-author of this article, is a Member of the Canadian Association of Financial Planners and has been with the Paterson & Associates firm for two years. She has designed extensive financial planning computer models.

8:30 a.m. – 4:30 p.m.

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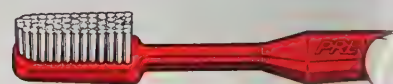
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The New CDA Uniform System of Codes and List of Services

Part I — "Beginnings"

P. Ralph Crawford, BA, DMD

"The best insurance against disease is health. Only God can give you insurance against illness." (Maurice Duplessis, 1890-1959)

On January 1, 1990, after four years of committee work, the new CDA Uniform System of Codes and List of Services will come into effect. There have been constant changes through the years, but this will be the first full revision. Numerous new nomenclature and revised computer codes are introduced.

The Journal begins a three part series that hopefully will assist busy dental offices to understand the important role of dental prepayment plans.

The Canadian Dental Association, although not "first," was at the leading edge throughout the world in the organization and sophistication of dental prepayment plan systems.

The History

The first dental plan on record for personal dental health expenditures was established as a fringe benefit for employees of the Denver and Rio Grande Railways Co., before the turn of the century.¹ A report from the Compensation Research Centre of the Conference Board in Canada, October 1977, makes mention of a dental plan established in California in 1911. Avnet and Nikias² report Dr. Bissell Palmer had proposed a dental prepayment plan as early as 1939 to the New York Academy of Dentistry. This proposal initiated the Group Health Dental Insurance Inc. under the Insurance Law of New York State in February 1948.

One of the earliest references³ in CDA was at the 1959 Board of Governors meeting in Halifax. A subcommittee was established to study all aspects of a plan to provide dental services to interested groups and to recommend a plan for a pilot model of a prepaid service. Another subcommittee in 1961, chaired by Dr. P.G. Anderson, was instructed "to study principles involved in formation of a fee

schedule and its relationship to the profession and the extending of dental services to the public."

In 1962 the First National Conference on the administration of prepaid Dental Care Programs was held in Seattle from September 24-26. Among the 112 people attending were representatives from three Canadian provinces, British Columbia, Alberta and Manitoba.⁴

A Classic

The Transactions of the Canadian Dental Association of the annual meeting of the Board of Governors in Edmonton, June 24-27, 1964, contains within its pages a "classic" in committee work.⁵ The Dental Services Committee reads like a "Who's Who" in dentistry; Drs. W.G. McIntosh, (Chairman); L. Bernier, W.J. Dunn, B.M. MacKenzie, H.G. Pettapiece, R.A. Clappison, H.J. MacConnachie, and P.G. Anderson (Adviser).

The subcommittee for Dental Prepayment Plans, Drs. R.A. Clappison (Chairman), R.C. Freeman and W.W. Pressey laid the groundwork for all that was to happen for the next quarter of a century. Their task was contained within a motion of the Dental Services Committee, "the subcommittee . . . be instructed to conduct a survey of the services to be performed with consistent nomenclature, with the objective of creating a model list of services."⁶

Dr. Clappison, reflecting back over 25 years, spoke of the countless hours expended to create a workable system. He recalled that when the committee asked CDA for a meal allowance because so many meetings occurred during their dinner hours and extended long into the evening, he was told, "Sorry, the CDA budget cannot afford that kind of an expenditure." (Nothing much changes in this world!)

Nor did that first committee have much in the way of resources for guidance. A reference in the CDA 1965 Transactions⁷ mentioned the outstanding contributions to the relative values of dental services made by the University of Michigan, the Michigan State Dental Association and the American Society of Oral Surgeons. However Dr. Clappison remembers those systems as far too complicated and cumbersome for daily dental office use.

Dr. R.A. Clappison

When Dr. Clappison of Toronto, 25 years after presenting his Committee's classic "Policy Statement on Dental Prepayment Plans," was recently addressed by the Journal as the 'Father of Prepayment Plans,' he very quickly and modestly declined the honour, indicating Drs. Freeman and Pressey contributed equally. (The Journal wishes to acknowledge that if Dr. Clappison was not the "Father" he was certainly the "Chief Obstetrician" at the birth!)

The Relative Value Unit

Dr. Clappison's report to the 1964 Board of Governors contained two of the very basic triad necessary for any prepayment plan — the Relative Value System of dental services and a Reference List of Services; (the third basic, Procedure Codes, would follow in a few years). Although evolution has made some alterations, those basics have remained the foundation for all dental plans to this very day.

The clear concise wording in that original report⁸ which laid down the principle of the Relative Value Unit, disguises the countless work-hours of three dedicated dentists more than 25 years ago. . .

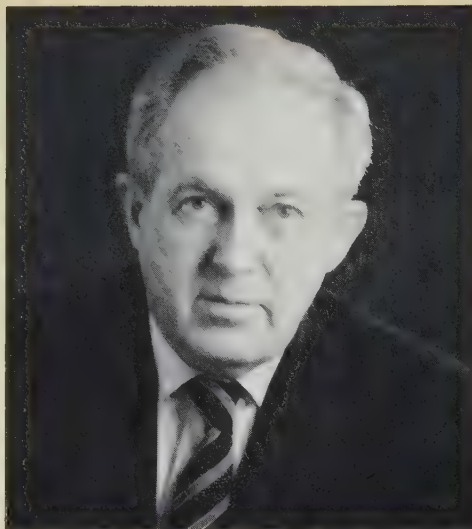
"Certain principles were established and an uncomplicated occlusal amalgam alloy restoration was selected as a

Robert A. Clappison, DDS, FRCD(c) who graduated with distinction from the University of Toronto in 1946, later received his certification as a prosthodontist.

He has taught at the Faculty of Dentistry at the University of Toronto in Operative Dentistry, Crown and Bridge and Practice Management.

Dr. Clappison has been very much involved in Canadian Dental Association endeavors since the 1960s and 1970s. In 1962-64 he was a member of the CDA Dental Services Committee and Chairman of the Subcommittee on Relative Value System. From 1965 to 1967, he chaired the Dental Services Committee, and was Chairman of the CDA Steering Committee regarding the CDA statement on Recommendations of the Royal Commission on Health Services. In 1970 Dr. Clappison was Chairman of the CDA Headquarters Property Committee and was, until 1972 a member of the CDA Headquarters Building Committee. In 1970-71, he was President of the Anderson Study Group.

He has served as President of the Canadian Academy of Restorative Dentistry (1974-75), President of the International Dental Study Club (1982-83), an examiner for the Royal College of Dental Surgeons of Ontario, and a director of the College, and was Chairman of the Fee Schedule Committee for the Ontario Dental Association.



Dr. Robert A. Clappison

From 1969 to 1970, he was a member of the Task Force on Dental Care Costs, Treasury Board, Province of Ontario.

Dr. Clappison has been and continues to be, a valued member of the American Academy of Restorative Dentistry. In 1987, he served as a member of the Council of that body and was also Chairman of its Clinic Committee. He is presently the Program Chairman.

Several of Dr. Clappison's papers have been published in this Journal.

basic unit. The principles that guided the selection of this basic unit were that the service:

1. Must be simple (unaccompanied by complications). The lack of complication is to mean that it does not involve pulpal tissue, or unusual anatomical variations.
2. Must be frequently performed.
3. Must be limited in variation of technique."

The report went on to methodically detail how office overhead, laboratory costs, patient difficulty, all had a role in the formula, $\text{TIME} \times \text{RESPONSIBILITY} = \text{RELATIVE VALUE UNIT (RVU)}$, and how they applied to every commonly used dental procedure.

Reference List of Services

As the dentists of today routinely flip through the pages of their Fee Guides they probably don't give a moment's thought to the men who years ago had to sit down, (always after a busy day at the dental office), and spend hour after hour organizing hundreds of different dental procedures into an orderly, systematized format. Their mandate was contained within a few lines. . .⁹

"The sub-committee be instructed to conduct a survey on the services to be performed, with consistent nomenclature, with the objective of creating a model list of services."

Their diligence and wisdom certainly created substantial benefits: the Reference List formed the basis of all that was to come.

Procedure Codes

The advent of the computer into the business of dentistry required adaptability to the "microchip world." Every procedure now required some sort of number, (the third element of the prepayment triad). It is not known who exactly started the "five-digit" coding system but it is noted in the 1971 Transactions¹⁰ British Columbia had been using a five digit system and Nova Scotia a four digit. A Board motion established the coding contained in the American Dental Association system. . .

"The Uniform System of coding of dental procedures as recommended by the American Dental Association's Council on Dental Care Programs¹¹ was reviewed. Council agreed that a numbers system should be adopted."

FDI "Two-digit" System

At the same 1971 CDA Board meeting when Procedure codes were accepted, a unified system of tooth nomenclature was adopted. . .

"Since several countries have now adopted, officially, the FDI "Two-Digit" system as the most convenient method of identification for international purpose and since Council agrees that uniformity should exist in all provinces of Canada, . . . resolved That Corporate Members be encouraged to recommend the use of the FDI "Two-digit" system."

The First Dental Plans

When the first committee members of the early 1960s were mandated to provide guides, nomenclature and codes, they knew timing was critical. After considerable "drifting" since the early twentieth century, dental plans expanded rapidly following World War II. The first dental plan in Canada arrived in the 1960s. A government publication, Dental Care Programs in Canada¹² reports,

"... all initiatives to reduce the economic barriers to dental care were taken by individual dentists, voluntary associations, or the public sector. But in 1966, a non-government sponsored dental plan was organized in British Columbia that was a harbinger of things to come in the next decade. In that year, the Sheetmetal Workers International Association (SWI) and the Credit Unions and Cooperatives Health Services Society (CU&S) signed an agreement for a premium-based group dental program. Under the terms of the contract, all eligible workers and their dependents were able to obtain basic dental services from the dentist of their choice and to have the bulk of the fee paid by CU&C. The program was financed by monthly premiums, the size of which was determined by whether or not the individual workers wanted coverage for legal dependents."

In British Columbia the carpenters and longshoremen shortly followed the sheet metal workers and by 1968, the province had more than 30,000 workers enrolled in dental prepayment plans.

1966 saw another milestone achieved . . . consultation with the insurance industry. Dr. Robert Clappison's first meeting with the Canadian Health Insurance Association (today the Canadian Health Life Insurance Association) was significant enough to be recorded in CDA Transactions. . .¹³

Bishop¹⁴ mentions several prepayment pioneers. . .

"... extraordinary labor leaders such as John Sparks of the United Automobile Workers (UAW) wanted it because it was an objective benefit for the UAW membership and because the organization of health care services was a central interest for him. An industrialist such as Henry Thornton of Dentsply, Inc. wanted it because he was part of the dental industry and understood the contribution of good dental care to general health. For men like Sparks and Thornton, it was a matter of pride as well as doing what was right. For most others, though, it wasn't so much a matter of moving toward dental care benefits; it was a matter of finally getting to them, and finally getting to them at a bargaining table."

Between 1969 and 1976 the total number of people in Canada covered by dental plans increased from approximately 41,000 to 292,000.¹⁵ In 1972 the first major dental insurance contract negotiated in Ontario was with the United Auto Workers. Today about 50 per cent of Canadians have some type of third party coverage.

Claim Forms

If in a few short years some of the major hurdles had been achieved; a Relative Value System, a Reference List of Dental Services, Tooth Identification Numbers, Procedure Codes and communication with insurance carriers. There remained one obstacle — the Claim Form. It was essential to the smooth flow of dental business that all parties use a standard claim form. It didn't come easy.

Although the CDA Board of Governors gave approval in 1968,¹⁶

"Whereas it is a prime objective that a basic standard claim form be designed by the profession and, Whereas such a form has been developed, therefore be it Resolved that it be approved as amended."

Not all dental jurisdictions and companies readily accepted. It was in 1974 the Ontario Dental Association introduced a standard form which was to be the only one utilized in the province. This was subsequently adopted throughout the country.

Whose Responsibility?

The importance of prepayment plans can be traced by the type of structure within the Canadian Dental Association to which responsibility is assigned. In the 1960s prepayment was a subcommittee of the Dental Services Committee. In 1971 Dental Services was raised to a Council level. Over the next few years a major overhaul of CDA committee/council structuring



Mr. J.M. Smith, President of the Continental Casualty Company (seated), signs North America's first contract for dental insurance in July, 1959, as Mr. Henry Thornton (standing right) former President of Dentsply International, and Dr. Percy T. Phillips (left), President of the American Dental Association, look on. Dentsply served as the pilot on the basis the firm would underwrite any losses the insurance program incurred. Mr. Thornton, whose firm was then called Dentists' Supply Company, commented on the occasion "if private industry doesn't come up with a scheme like this, the government surely will."

(PHOTO: COURTESY MR. BURTON BORGELT, PRESIDENT AND CHIEF EXECUTIVE OFFICER, DENTSPLY INTERNATIONAL)

took place. An amalgamation of dental services, auxiliary services, public health and preventive dentistry resulted in the Council on Health Care being established in 1973. Dr. R.G. Dickson of Alberta was Health Care's first chairman.

Third Party Dental Plans Committee

All dental insurance business continued to be channelled through the Council on Health Care until 1984. At the CDA Board of Governors meeting in Vancouver, realizing prepayment dentistry was only to become more complex, the Governors decided to establish a separate entity and created the Third Party Dental Plans Committee. The new Committee's first chairperson is Dr. Don MacFarlane of Vancouver who just happened to be a member when the original Health Care Council came into being in 1973.

The CDA Executive Council knew the task of the new Committee would be formidable. For ease of rapid action it was determined the Committee would be small, only four members, comprised of Dr. MacFarlane (chairman); Dr. Toby Gushue, St. John's; Dr. Don Gutkin, Winnipeg and Dr. Bill Leggett of Brampton.

Each member-dentist already had a proven record in dental insurance affairs. In September, Dr. Gushue assumed the chairmanship.

The Executive decision was wise. Like Dr. Clappison's Committee 25 years ago, few CDA Committees have had to face as many serious tasks in so short a period of time. Δ

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Challenges and dilemmas in behaviour guidance of the pediatric dental patient

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Summary

In addition to the pressures of providing a high quality of dental care for children, dentists practising pediatric dentistry are faced with some legal and ethical concerns regarding the use of behaviour management techniques. The following article will discuss some of the pressures and ethical dilemmas facing dentists treating children. Strategies for making the dental appointment more humane for child, parent and dentist are suggested.

The most perplexing issues in pediatric dentistry today are related to the management of patients. In addition to questions regarding clinical management, dentists treating children have to make careful judgements concerning management of patient's behaviour.

The following scenarios are a few examples of the situations that often arise during the dental treatment of child and adolescent patients:

"I really had to raise my voice to Jamie today and use a lot of physical restraint to administer the local anesthetic. I was not happy about being so aggressive, but it was important to get that filling done. I wonder, though, how he is going to feel about going to the dentist now?"

"I feel frustrated that I did not get any work done on that four-year-old today, but I did not want to use undue force. Maybe I should have been more forceful; hand-over-mouth-exercise might have worked, but I always feel uncertain about using that technique and I wonder what the parents will think if I use it."

"Whew, that six-year-old that came in to see our hygienist today certainly made an unnecessary fuss about having his teeth checked. His behaviour in the waiting room was quite bizarre, too. I wonder if he always displays such unusual

behaviour? I think he needs some professional evaluation and counselling, but his parents may be upset if I recommend seeing a psychologist."

It is these troubling issues related to children and parents that are of most pressing concern to practitioners of pediatric dentistry. We know that we have the skills to deliver good dental care, but we are often troubled about whether we are delivering our services in the most effective, humane, and acceptable manner possible.

Pressures of pediatric dentistry

The dental professional has always been concerned with practising in a humane and ethical manner, but our world on the threshold of the 1990s presents unique and perplexing challenges. First of all, patients and parents have high expectations of the quality of treatment that they demand¹. Not only do they expect ideal treatment, but parents often assume that we have some magical means of delivering care to their preschoolers that does not involve needles, drills or rubber dams.

In addition, the management techniques that our profession has judged to have positive effects on children's attitudes and behaviour may not be regarded as benign by parents and other health professionals. A survey that has been conducted of parents' attitudes toward management techniques indicated that some of the more forceful non-pharmacologic techniques (restraint, hand-over-mouth-exercise, Papoose Board) were considered unacceptable by many parents.² Hand-over-mouth-exercise (HOME) and the Papoose Board were considered unacceptable regardless of the dental treatment that the child

required. All of these non-pharmacologic techniques were considered less acceptable than sedation or general anesthesia.

Although this study was conducted in the U.S. and no similar data is available in Canada, it is apparent from the results of this study that parents must be informed regarding the specific types of techniques that may be used to manage their child's behaviour. While the majority of parents have no problem with the use of soft types of behaviour guidance like voice control and mouth props, express consent should be obtained to any firmer techniques that may be employed. It should be explained to parents that firm types of behaviour guidance will be used only when necessary and will be applied in a supportive, not a punitive, manner. Parents do have the right to decide what will be done to their child. Obtaining the informed consent of parents to the use of firm management techniques will help avoid misunderstandings and convey the dentist's concern for the child's well-being.

While obtaining express consent to the use of management techniques may seem to be an unnecessary precaution to some practitioners, the careful monitoring of sedated patients is a well-documented necessity. As a result of a few unfortunate outcomes and the concomitant negative publicity for the dental profession, the American Academy of Pediatric Dentistry, in conjunction with The American Academy of Pediatrics, developed and published in 1985 "Guidelines for the Elective use of Conscious Sedation, Deep Sedation and General Anesthesia in Pediatric Patients."³ These recommendations were welcomed by practitioners to ensure safety of patients, but enacting the recommendations is a costly and

time-consuming undertaking. The need for additional trained personnel and monitoring equipment (precordial stethoscope, pulse oximeter, capnograph) has meant that many pediatric and general dentists no longer administer conscious sedation* in their offices. Therefore, the child who cannot be managed with non-pharmacologic techniques, possibly supplemented with N₂O and O₂ inhalation sedation, is now often treated in the operating room under general anesthesia or, not treated at all.

The use of general anesthesia for dental procedures on children is not always an available option, depending upon where you are practising. Not all provincial health plans will pay for a general anesthetic that is administered to enable completion of dental treatment. When a parent is unable to bear the cost of the general anesthetic, the practitioner may simply be unable to perform the treatment required or may use sedation when he or she is uncomfortable with its use. Either way the child's health may be at risk.

Many medical procedures that could be done by physicians using local anesthesia are routinely done under general anesthesia without any question. Therefore, lack of coverage by our provincial health plans for general anesthesia for dental treatment seems quite unreasonable. Myringotomies and tonsillectomies are, for example, two procedures that can be done using local anesthesia. If any of our patients needed these procedures, a general anesthetic would be recommended by the physician and expected by the parents. Rationale for such general anesthetics are based on quality of care criteria for safe and effective treatment of children. The same criteria will support necessary dental care for children under general anesthesia. The need for a general anesthetic should not, therefore, be a question when a practitioner is faced with the intricacies of restoring extensively-decayed and pulpally-involved primary incisors on an extremely young child.

Due to changing parental attitudes, stricter sedation guidelines, and difficult payment for GA., dentists treating children have a progressively diminishing number of options available to them for management of their non-compliant pedi-

atric patients, but there is no evidence to suggest that the number of children who are difficult to manage is decreasing.¹ While the general prevalence of dental caries is diminishing, it often seems to many of us that the children who are the most difficult to manage have the most serious dental problems.

We create additional stresses for ourselves by feeling under pressure to treat most, if not all, of the pediatric patients that present for treatment.¹ Those who practise in more remote and rural areas know that if they are not able to treat a child, the dental treatment may never get completed. When a referral is impossible or when a referral is refused by parents, the referring dentist understandably feels under duress to treat the child. Inappropriate or unsafe management methods may result.

The problems that face those of us who treat children on a regular basis can, therefore, be summarized as follows:

1. High expectations by parents and society for "trouble-free" care
2. Constraints on management methods, both pharmacologic and non-pharmacologic
3. Decreased access to general anesthesia for dental treatment
4. Perceived expectation by society and by ourselves to treat all children

Ethics of behaviour management

These pressures that influence pediatric dental care raise some interesting ethical questions. One of the primary difficulties of managing children's behaviour is that children up to a certain age are incapable of making informed decisions regarding "what is best for them".⁴ Young children are considered to be incapable of choosing and acting on the basis of their own goals and principles, because they are not old enough to have developed goals and principles. Children have not developed **autonomy**; they do not yet have the experience to know what is in their best interest.⁴ We all know that it is foolish to try to persuade uncooperative children that they should get their tooth fixed, because if they do not get the tooth fixed now they may get a toothache at a later date. Children are concerned only with their immediate best interests, not their future best interests.

Of course, issues in addition to a child's dental problems must be considered when deciding what is in a child's best interest. As well as doing the dental procedure that is going to maintain a child's level of

dental health, we must consider how our treatment and the way we deliver it will affect the child's ability to make good decisions about their dental care in the future.⁴ Our young patients are on a path to the development of autonomy. Ideally, any behaviour management techniques that are used during a dental appointment will enhance and not inhibit a child's ability to make reasonable decisions about their own future dental care.

We usually do not know what long term effect our behaviour management methods may have on our patients. We have assumed that our techniques of management are psychologically neutral, but we really cannot be certain that techniques like HOME, voice control or physical restraint are indeed neutral. Clinical experience with difficult patients that stay on for long term care suggests that our behaviour management techniques should not affect a child's future ability to deal with dental care. A vital factor in this successful care is that the techniques are applied in a supportive, and not a punitive manner.

Humanizing dentistry for children

Given these ethical dilemmas and the constraints on use of behaviour management techniques, it is comforting to acknowledge that the majority of child and adolescent patients accept dental treatment in a relatively cooperative manner. Most pediatric dental patients behave well, but there are, nonetheless, a small percentage of patients who continue to challenge both the generalist and the specialist. The dental visit should be as humane and supportive for these difficult patients as it is for the cooperative child patients. With the apparently decreasing selection of alternatives for managing the behaviour of disruptive patients, we might seriously consider the following strategies which, if implemented, may make the dental appointment more humane for child, parent and dentist.¹

1. Share the burden of patient management decisions.

We do not need to be the place of last resort for all problems for all children. Help that will be extremely valuable in managing non-compliant patients may be available to us from other professionals. Sessions with child life specialists, child and school psychologists or child psychiatrists may identify reasons for a child's altered responses to the dental sit-

* Conscious sedation is defined as a minimally depressed level of consciousness that retains the patient's ability to maintain a patent airway independently and continuously and respond appropriately to physical stimulation and/or verbal command, such as "open your eyes".³

uation and may help us develop strategies for effectively dealing with that child's unique needs. A referral may have several positive benefits in addition to helping us manage a difficult dental patient:

- a. Another professional can give a distressed child or adolescent guidance in dealing with other situations that they find stressful. Most children who cannot cope normally with dental procedures have difficulties in other aspects of their young lives.
- b. Input from another source would impress upon parents that their child is acting out of the norm and needs some intervention.
- c. Another opinion would add credibility to the dental profession's need for reimbursement for any special interventions that are performed to accomplish dental treatment for these children.

2. Consider more extensive pre-appointment preparation of children in special age and need categories.

Data from the child life literature suggests that in many situations anxiety is decreased and compliance increased by use of appropriate preparation such as supervised play. This preparation can be done by other professionals or dental auxiliaries.

Individualized attention prior to dental care should be reimbursed. Third party carriers must be apprised of the need for pre-appointment preparation as a method of decreasing other more costly treatment options. The health plans that pay for general anesthesia in some provinces also pay for dental treatment. Reimbursement for pre-appointment counselling may decrease the large percentage of the health care dollars spent on general anesthesia for dental work for children. Enlisting the help of other professionals in making outpatient care possible for more children will serve the long term interests of the insurers as well as the children.

3. Flexibility in scheduling.

Many of our patients and their parents who are more demanding and skeptical than before require more communication than we may be giving. Time must be scheduled for careful consultations, education, management and preparation. Perhaps these times of discussion and education are more vital to our patient's best interests than the dentistry that we do.



4. Consider parents to be allies in the delivery of dental care.

Major changes in all of pediatric care have occurred and parents are included in the decision-making and delivery of care where they would have been excluded a few years ago. Parents' right to know and question professional care has immeasurably changed our relationship with them. Upgrading our informed consent procedures has caused us to discuss issues of management more openly than ever before with parents. Parents will have a better understanding of the difficulty of our work when we take the time to talk to them about what we have to do and how we plan to do it.

5. Improved and earlier preventive care.

Earlier contact with families and children, better education of other health care professionals and an early start to preventive therapies will decrease the amount of difficult treatment children have to cope with in our practices.

Most practitioners are troubled by the amazingly high prevalence of "nursing caries."⁵ Because transmission of the pathogenic microorganisms involved in nursing caries occurs from parent to child, it is mandatory that our preventive strategies start with the expectant parents. The passage of *S. mutans* from parent to child will only be decreased if expectant parents are on a good dental care program of their own. They must be aware of what is required of them as parents to prevent the unwelcome tragedy of nursing caries.

Intervention by the dental professional is required at a much earlier age than the

commonly recommended age of three years. A child's first dental visit should occur at about the time of eruption of the first primary tooth. The purpose of this early visit is to discuss diet and teeth cleaning and other important aspects of preventive care with the parents. Parents will only acknowledge the importance of their early involvement in infant dental care if we as a profession are also willing to be involved with children when they are infants.

Pediatric dentistry has, at various times, been described as being the most challenging and the most satisfying area of the practice of dentistry. It has certainly always been much more than "little fillings in little teeth of little people." Children's dentistry demands more than a "little" amount of humanity, dedication and skill from those of us who practise it. We must, however, keep an open mind regarding possibly useful strategies that are available to humanize dental care delivery for children. If we are not creative and daring, we will continue to promote the present situation which is not optimal for all our patients and is becoming less and less humane for those of us who treat children.¹ Δ

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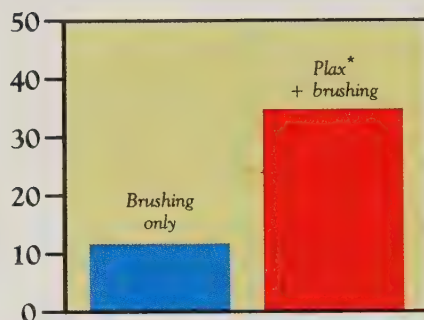
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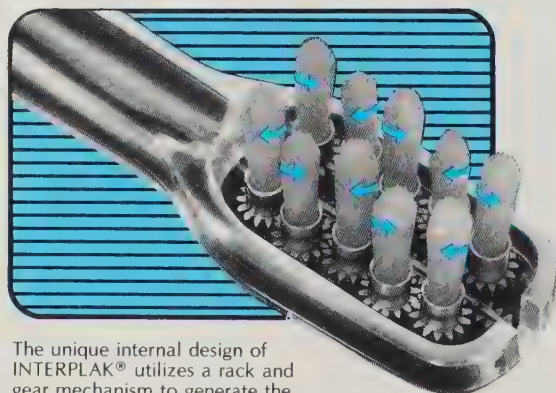
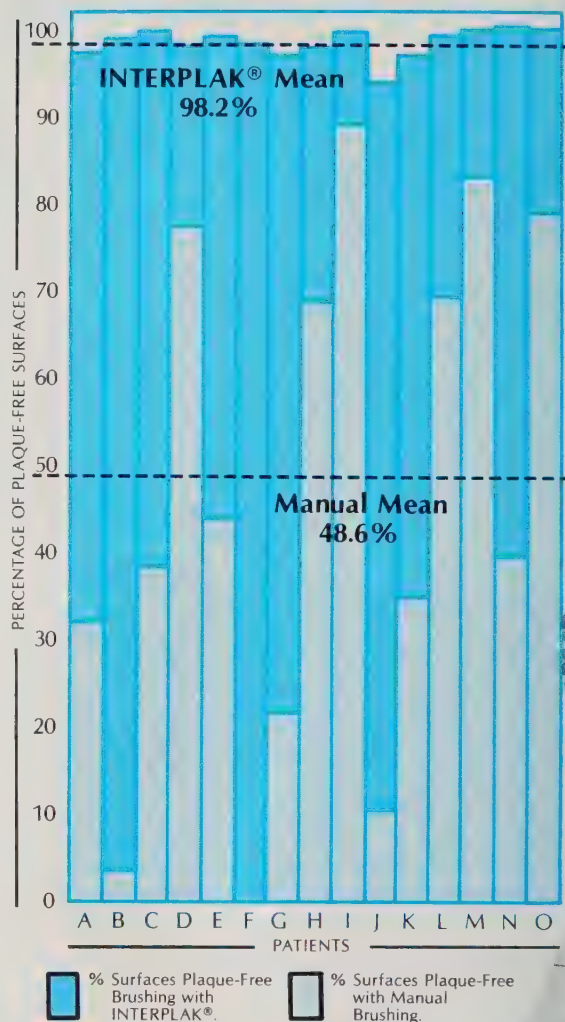
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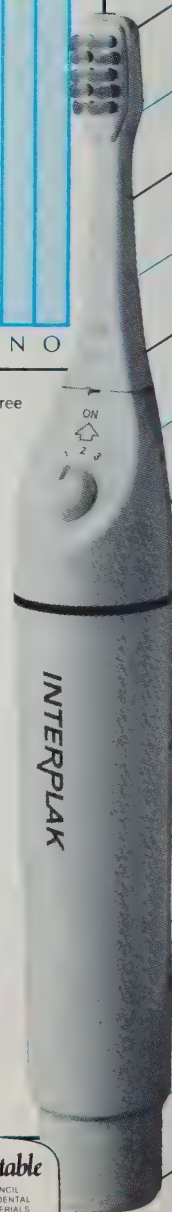
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Facial swelling and asymmetry in children: Systematic diagnosis and review

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ABSTRACT

This paper reviews a systematic approach which can be used to determine the diagnosis of a child who presents with a facial swelling or asymmetry. Once the most likely diagnosis is formulated then appropriate treatment can be initiated. Examples of some of the more common facial swellings within the listed differential diagnostic categories are also presented.

A child presents with a facial swelling. Regardless of one's clinical experience, such a presentation is invariably a cause for concern. The pedodontist or other dental specialist, or generalist, are often presented with this problem and all should know how to manage the case either through active treatment or referral. It is important that the clinician develop a methodical and systematic approach in order to diagnose the etiology of the swelling, before undertaking the appropriate treatment. The purpose of this paper is to describe a concise systematic approach required to arrive at a differential diagnosis, and then to review the presentation and management of various pediatric facial swellings.

Initially the child should be observed on entering the office. Does he/she appear to be energetic with good colour, or tired, withdrawn and pale? The first priority is to ascertain if the child is well or ill at this time. Then, as with all patients, a complete history of both the patient's present and past general health including medications, illnesses, allergies, etc., is taken. Following this, a history of the present condition, in this case the swelling, should be obtained. Inquire if the child has been eating or drinking and whether there has been a fever recently. Children during febrile periods are very prone to dehydration which can increase the severity of their present condition. If a fever is suspected this should be confirmed by taking the child's temperature either orally or axillarily.

Once it is established that the child is



Figure 1 Posterior-Anterior and panoramic radiographs of a four-year-old child with hemifacial microsomia. Note lack of mandibular and dental development on the affected side.

medically stable then attention should be focused upon the facial swelling.

The history concerning the swelling should include inquiries as to the initial onset, duration, pattern of growth, slow and steady versus rapid, with variable periods of exacerbation. Is the involved area painful, if so, is the pain constant or variable in character, intensity and duration. Determine if there was a history of trauma or previous therapy to the region. Inquire if the child perceives any difficulties in moving the jaw, opening the mouth, swallowing or breathing. At this stage of inquiry, if the child appears to be acutely ill, or medically compromised, then immediate steps should be taken to stabilize the child's general health. This may entail referral to an emergency ward of an acute care facility. Only the medically stable child should receive dental care in an office setting. Upon completion of the history of the present condition the



Figure 2, 3, 4 Facial photograph of a seven-year-old girl with right facial asymmetry, bilateral infra-orbital ecchymosis due to a traumatic blow which resulted in a mandibular fracture; radiograph in figure 3 reveals the mandibular fracture (arrow), and PA radiographs demonstrate fracture pre- and post-reduction and fixation.

clinician should have an impression of which category, within a differential diagnosis, this particular swelling is showing a tendency to belong. However, do not make a diagnosis at this early stage.

The next phase is to perform a complete extraoral examination of the child. First establish a general impression of the child's physical appearance. Do they appear normal in terms of growth and development? Describe the anatomical location and extent of the swelling. Is it unilateral or bilateral? Examine the child for any evidence of cervical lymphadenopathy. With regards to the swelling, note the colour, texture, consistency and surface temperature. Is the lesion firm or fluctuant? Is it warm to the touch? Inquire if there are any altered neural sensations in the region such as paresthesia or anesthesia, which can be confirmed by a tactile sensory investigation using a

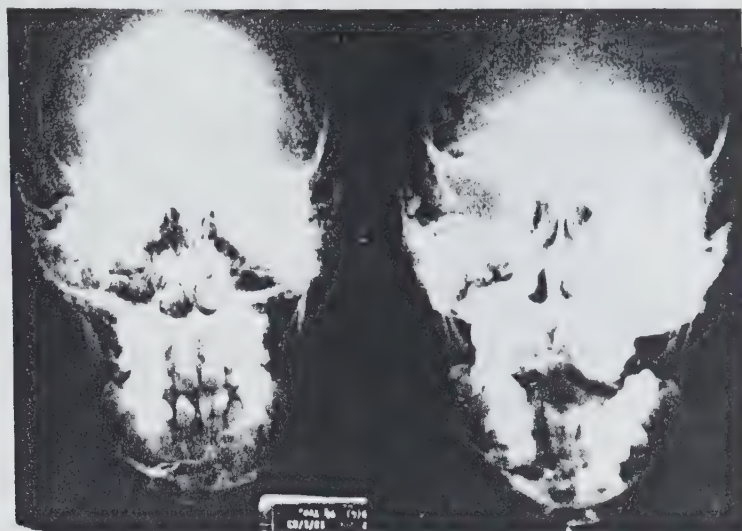
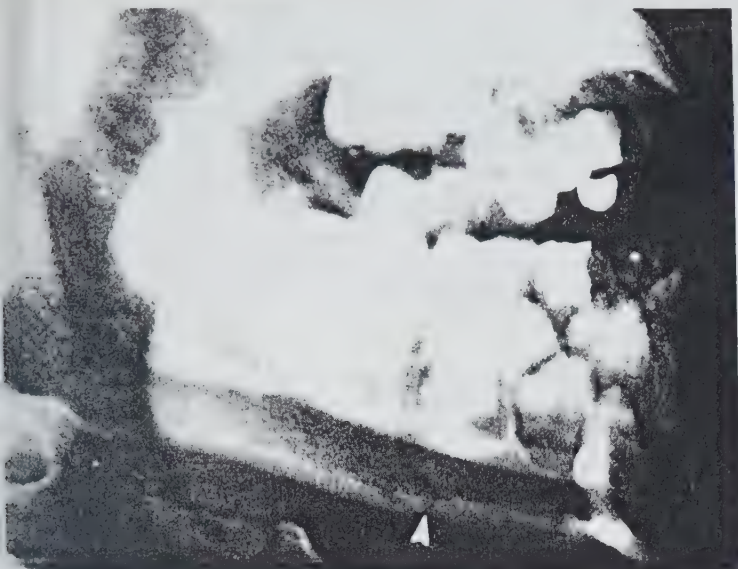


Figure 3, 4, 5

sharp object (pin) and a very soft object (paper tissue). Palpate the bony margins of the mandible, maxilla, malar, and orbital regions to assure their continuity and symmetry. Examine the patient's range of mandibular movement, including palpation of the temporomandibular joint regions both laterally and posteriorly.

At the completion of the extraoral examination, the characteristics of the facial swelling should now be used to support or negate the initial diagnostic impression governing the nature of the swelling that was obtained from the history.

The next step in the systematic process is to perform a complete intra-oral examination, including both the non-involved and involved regions. Note the presence of teeth, caries, tooth mobility, inflammation, ulcers, fistulas, or swellings on any of the mucosal surfaces of the oral cavity. Palpate intra-oral swellings and bony margins. At the completion of the clinical examination special tests or investigations may be required to arrive at the



Figure 5 Facial photograph of a five-year-old girl with a right facial swelling as a result of a dentoalveolar abscess related with tooth 85.

diagnosis. This would include intra and extraoral radiographs, pulp testing, culture and sensitivity swabs, cytology, and possibly a biopsy.

Upon completion of the tests, all the information should be collated to develop a sound differential diagnosis of the swelling with one of the possibilities being the most likely. The initial therapeutic intervention should then be directed toward the most likely diagnosis of the facial swelling. By following a systematic approach as outlined in Table 1 there will be less chance of making a diagnostic error which would then place the child at risk.

Facial swellings, like all pathological conditions, fall into certain diagnostic categories which are outlined in Table 2, and which can be used to help determine the exact or most likely diagnosis of the swelling. It is important that a systematic diagnostic approach be used in determining the diagnosis before treatment is provided. This is to assure that the treatment provided is the appropriate manage-



Figure 6 Angioneurotic edema of the upper lip resulting in bilateral swelling of the upper lip immediately after a topical fluoride application.



Figure 7 Bilateral infraorbital swelling in response to an insect bite (arrow) on the bridge of the nose.

ment for that particular child. Table 3 will outline some specific examples of the more common facial swellings observed in children, highlighting diagnostic differences and similarities, and their management. This list is not intended to be a complete review, but represents a cross section of the more common conditions observed by members of our department. Δ

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Figure 8, 9, 10 Facial photograph of a four-year-old boy with Histiocytosis-X, note the right facial asymmetry and exophthalmus, and the left ptosis.



Figure 9 the intra oral photograph demonstrates a normal complete primary dentition, with the exception of some increased pigmentation of the alveolar mucosa in the right buccal vestibule.



Figure 10 the corresponding panoramic radiograph demonstrates an osteolytic lesion in the right mandibular body and ramus characteristic of Histiocytosis-X.



Figure 11 A five-year-old boy with Cherubism demonstrating bilateral facial swelling.

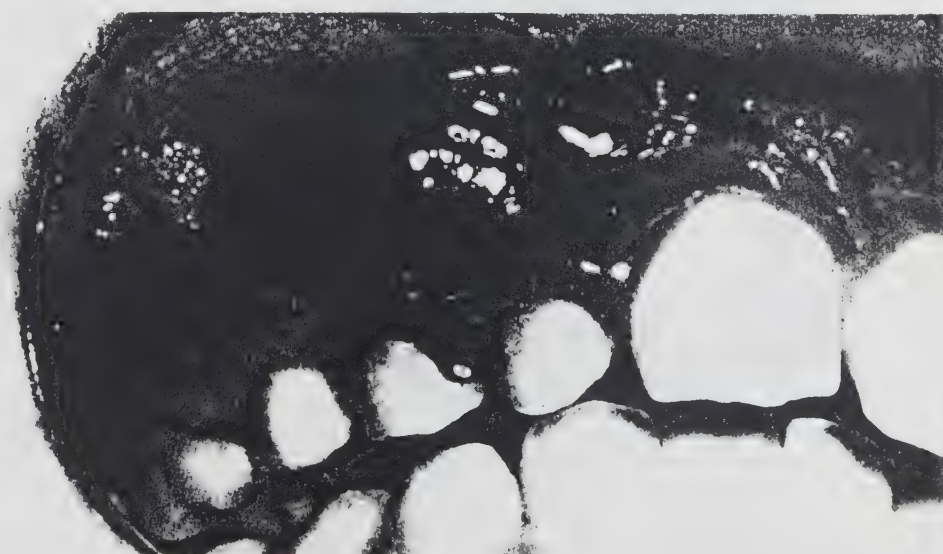


Figure 12 An intra oral photograph of a seven-year-old child with a hemangioma in the right buccal vestibule.



Figure 13, 14 An intra oral photograph of a 10-year-old child with a left swelling involving the attached and alveolar mucosa in the cuspid region.



Figure 14 is the corresponding series of intra oral periapical radiographs. After biopsy a diagnosis of dentigerous cyst was made.

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TABLE 1

Systematic Diagnostic Approach

- Initial general appearance of the child
- Medical history past and present
- History of the lesion
- Extraoral examination
- Intraoral examination
- Special tests and investigations
 - radiographs intra and extraoral
 - pulp test electric, thermal, percussion
 - study models
 - clinical photographs
 - culture and sensitivity
 - cytology
 - biopsy
 - diagnostic injection with local
 - allergy tests
 - blood work
 - urinalysis
- (all the above are done where and when appropriate)
- Differential Diagnosis
- Management



Figure 15, 16 A five-year-old girl with mooning facial appearance due to systemic steroid therapy.



Figure 16 post treatment photograph of the same child.

TABLE 2

Diagnostic Categories for a Facial Swelling

- Congenital (Hereditary)
- Developmental
- Traumatic
- Metabolic (Systemic)
- Inflammatory
 - acute
 - chronic
- Infectious Disease
- Hypersensitivity
- Reactive
- Neoplastic
 - benign
 - malignant
- Cystic
- Iatrogenic



Figure 17 Left facial asymmetry and infraorbital swelling with infraorbital ecchymosis which was a hematoma induced by a local infiltration anesthetic injection in a boy with a history of hemophilia.

TABLE 3

Facial Swellings in Children

Category and Example	Usual Age	Clinical Features Extra and Intra Oral Findings	Radiographic Features	Treatment	Reference(s)
Congenital Hemifacial Microsomia	at birth	slow growing deformity evident at birth, unilateral malformation of cranial structures that arise from 1st and 2nd branchial arches, unilateral asymmetry, underdeveloped condyle, ramus, zygomatic arch, malar bone and associated soft tissues normal consistency to palpation not painful or tender delayed dental development/eruption on affected side, increase of congenitally missing teeth on affected side	decrease size of affected side ± small teeth ± missing teeth	no specific treatment orthodontic combined with surgery routine dental care	1, 2
Developmental Primary Hemihypertrophy	apparent during periods of accelerated growth puberty	slow growing uni or bilateral increase in size of zygoma, maxilla, mandible and associates soft tissues increased pigmentation, ± facial paralysis or paresthesia thick skin, normal consistency not tender to palpation macroglossia, macrodontia, precocious eruption, shortened roots	increased dimension of inferior alveolar nerve canal and mental foramen enlargement of affected bones	investigate for body involvement because of association with abdominal neoplasia routine dental care combined orthodontic/surgical management once treated result is stable	3
Developmental Hemifacial Atrophy Rombert's Disease	develops in 1st or 2nd decade of life, duration approx. 10 years	progressive atrophy of subcutaneous tissues of half the face, starting at forehead, unilateral, decreased soft tissue, not tender to palpation, not painful, delayed eruption on affected side, decreased size of tongue, maxilla, mandible on affected side	normal advanced cases decrease in size decreased trabeculation consistent with disuse atrophy	no specific treatment cosmetic surgery once process has arrested	2, 4, 5
Traumatic Facial Fracture	any age	rapid immediate hematoma/edema of affected side, uni/bilateral ecchymosis and swelling, ± deviation with opening, ± lateral movements, may lose continuity of bony margins, tender to palpation normal/altered occlusion	fractures noted greenstick most common in children	depending on fracture reduction ± fixation, condylar-physiotherapy	6
Acute Inflammatory Dento-alveolar Abscess	after 6 months any age	rapid/fast growth without treatment (days) unilateral swelling, raised erythematous, bound by fascial planes ± febrile, palpable lymph nodes in cervical chain soft, tender, warm painful, ± fluctuant, carious/restored/fractured tooth ± swelling in sulcus, ± trismus, ± dysphagia	usually rarefying osteitis, widened periodontal ligament space, loss of lamina dura ± caries	incision and drainage remove cause antibiotics antipyretics culture and sensitivity	7

Category and Example	Usual Age	Clinical Features Extra and Intra Oral Findings	Radiographic Features	Treatment	Reference(s)
Chronic Inflammatory Garres Osteomyelitis	any age	slow weeks-months, non-painful, afebrile, unilateral facial swelling usually of mandible, normal skin, non-tender hard, firm bony enlargement, usually a carious tooth, buccal vestibule swelling firm/hard, mucosa normal without ulceration or inflammation	usually periapical radiolucency associated with carious tooth, cortical expansion, $\pm$ onion skin appearance due to deposition of new bone, sun-ray appearance if bone is perpendicular to lateral cortex	remove source of infection antibiotics, culture and sensitivity, should resolve by removing the cause	8
Infectious Mumps	usually 5-15 years	within days, swelling and tenderness of the paratid area, usually bilateral febrile, malaise	normal	supportive and symptomatic, swelling lasts up to 14 days	19
Hypersensitivity Angioneurotic Edema	any age	rapid onset minutes-hours, bilateral soft tissue swelling $\pm$ rash, $\pm$ urticaria, non-fluctuant, non-tender, no palpable nodes, normal intra oral	normal	antihistamines in the absence of respiratory symptoms, if respiratory difficulty develops requires adrenaline and steroids	9
Reactive Histiocytosis-X	infants Letterer-Siwe child-adolesc. Hand-Schuller Christian 2nd decade Eosinophilic Granuloma	gradual development of exophthalmus and/or diabetes insipidus, unilateral, non-tender, soft facial swelling no palpable nodes, $\pm$ ptosis, $\pm$ bone pain associated with swelling precocious eruption, premature loss of teeth, soft tissue lesions, $\pm$ painful	alveolar bone loss osteolytic lesion with sharp well-defined, un-corticated margins, irregular shape, cortex and follicles may be destroyed $\pm$ pathologic fracture	chemotherapy for generalized forms local enucleation with chemotherapy for Eosinophilic granuloma	10, 11
Reactive Familial Fibrous Dysplasia: Cherubism	early childhood 2-7 years	slow growing, progressive bilateral symmetrical swelling involving the angles of the mandibles, painless, hard swelling, may have associated reactive lymphadenopathy oral mucosa normal in texture, color, no ulcerations, firm, displacement or exfoliation of erupted teeth, premature loss of primary teeth	bilateral multilocular cyst-like lesions involving ramus and body of mandible borders tend to blend with normal bone expansion of buccal and lingual cortical plates	no specific treatment lesion resolves at puberty cosmetic facial surgery post-puberty	5, 12
Neoplasm Benign Hemangioma	usually 2nd decade of life	progressive slow growing painless unilateral facial swelling, $\pm$ pulsations, $\pm$ bruit, vascular nevi or dilated veins, no nodal involvement, normal temperature may have displacement or hypermobility of teeth, usually first molars due to alveolar resorption spontaneous gingival bleeding, pain dysesthesia of lower lip/chin $\pm$ throbbing sensation in affected area	uni- or multilocular radiolucent lesions, usually premolar-molar region variable margins angiography required	surgical removal sclerosing agents embolization	13, 14

Category and Example	Usual Age	Clinical Features Extra and Intra Oral Findings	Radiographic Features	Treatment	Reference(s)
Neoplastic Malignancy Osteogenic Sarcoma	adolescent to young adult 2nd decade	rapid, painful unilateral swelling, past history of trauma, firm hard bony swelling, loose teeth, intra oral swelling, paresthesia, tooth-ache, bleeding	sun-ray spicules of new bone sclerosis, areas of radiolucency, cortical plates expanded and perforated symmetrical widening of periodontal ligament space of 1 or more teeth	surgery radiotherapy chemotherapy	5, 15
Cystic Dentigerous Cyst	> 10 years of age	gradual slow growing unilateral facial swelling, painless, if secondarily infected can be painful, firm, hard swelling, normal mucosa, failure of a tooth to emerge/ erupt, $\pm$ tooth mobility	large radiolucency associated with crown of an unerupted tooth well defined sclerotic margin may cause resorption of roots adjacent teeth	enucleate/ marsupialization depending on size and location	16, 17
Iatrogenic Steroid Therapy	any age	rapid within weeks of treatment cushingoid appearance, mooning of the face, bilateral symmetrical enlargement, soft tissue enlargement, non-tender, no nodal involvement normal intra-orally	normal	none resolves on its own once steroids are withdrawn	5
Iatrogenic Hematoma	any age	rapid/immediate with injection of local anesthetic, unilateral swelling in region of injection, initially normal color with time ecchymosis develops non-fluctuant intra orally $\pm$ swelling	normal	none, resolves on its own initially apply cold compress, in 24 hours apply heat resolves in 7-14 days $\pm$ antibiotics	18

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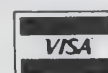


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Treatment modalities for primary incisors

S.J. Weinberger, DDS, FRCD(C)

Although there have been advances in prevention, some children remain susceptible to dental caries. In young children, one of the most prevalent problems is nursing caries. It is considered to be a typical form of rampant decay.¹ Its progression is rapid and if left untreated, esthetics as well as health may be compromised. A Canadian study by Derkson and Ponti estimates a prevalence of 3.2 per cent of nursing caries in a non-fluoridated area.² Another reason for the need for restorations may be fracture due to trauma.

Why is it necessary to attend to primary teeth? Are they going to shed soon?

These are questions often posed by parents. While the age of the child and natural exfoliation of teeth are considerations, concerns about infection, pain, proper function and esthetics must be considered.

Successful restoration of primary teeth is not always easy to achieve due to the small size of the teeth, thinness of enamel, alveolar anatomy, and rapid spread and extent of decay.³ In some cases the extent of hard tissue destruction is so advanced that it poses a problem to the clinician who will have to make a decision regarding treatment for the child patient.

Because children are children, the restorations also have to withstand possible further trauma and abuse from foreign

objects in the mouth. These problems, and the ability of a child to cope with treatment, make selection of the method of restoration critical. In most instances, procedures used will be done in the dental office using the different techniques for behavior shaping. It is important to realize however that some patients may need to undergo treatment using sedation or may need to be treated under general anesthesia. The purpose of this paper is to review the options available to the clinician for the successful treatment of primary anterior teeth in the child patient. Modification of techniques that are unavailable in standard textbooks will be detailed.

While the basis for some classifications of anterior restorations have been the different materials utilized,⁴ the present article will divide treatment options according to the caries extent:

1. Small to moderate lesions, usually involving one or two surfaces.
2. Extensive lesions, more than two surfaces, usually with considerable destruction.
3. Severe lesions, usually considerable crown destruction involving the dental pulp.

1. Small to moderate lesions

Figure 1 shows the intraoral appearance

of a three-year-old child. Note the decalcification on the buccal aspect of the upper incisors. Teeth #61 and #62 are carious with only minimal loss of tooth structure. Tooth #52 however, is fractured at the disto-incisal aspect. Teeth #53, #51 and #63 are severely decalcified. Figure 2 demonstrates early proximal carious lesions in a child 4.5 years of age. All of the carious sites in Figures 1 and 2 could be considered small to moderate lesions. However, there are different treatment approaches that are possible. The treatment options for these teeth with minimal cavitation and decalcification are as follows:

- (a) Localized fluoride gel application.
- (b) Disking of the affected surface with application of a fluoride varnish.
- (c) Restoration with a composite material.

(a) In cases where decalcification and minimal cavitation is evident, particularly with toddlers unable to cooperate, time may be "gained" by applying a small amount of 0.4 per cent stannous fluoride gel in a gauze (Figure 3). The procedure is explained to the parent and applications are given weekly in the same way as demonstrated in the office. The technique may promote remineralization and arrest the progression of early carious lesions. Another advantage of the pharmacological treatment is the known effect of stannous fluoride lowering the amounts of streptococcus mutans.^{5,6} This technique is particularly applicable to decalcified areas such as those evident on teeth

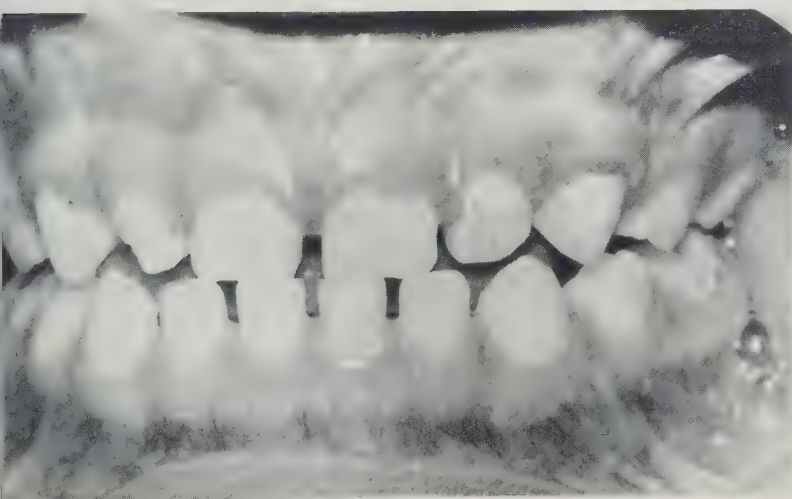


Figure 1 The primary dentition reveals small to moderate lesions on teeth #61 and #62. A distal incisal fracture on tooth #52, and decalcification of teeth #53, #51 and #63.

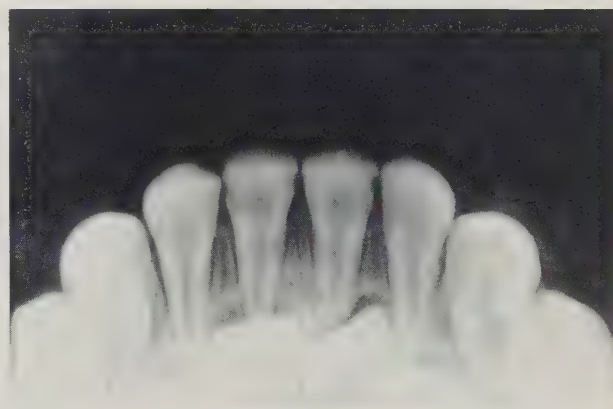


Figure 2 Note the small proximal carious lesions on the lower incisors.



Figure 3 The fluoride gel is contained in the gauze. A small amount of fluoride is used to avoid ingestion of the agent.

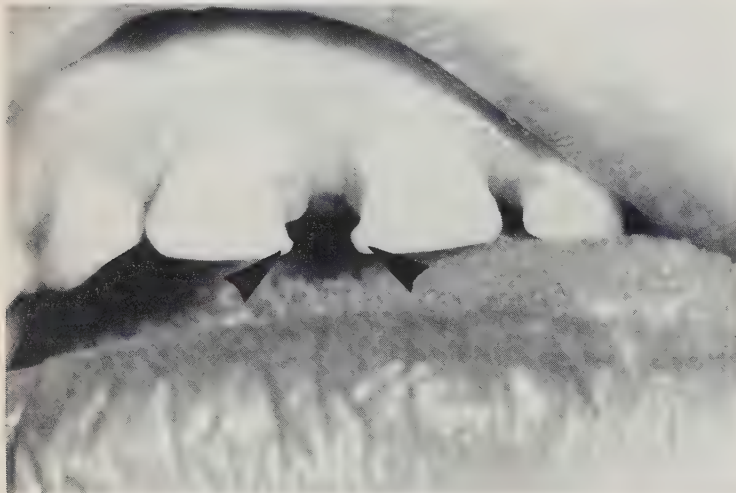


Figure 5 Arrows point to the thin incisal corners on teeth #51 and #61. Even if preserved during preparation they will likely fracture.

#51, #53 and #63 (Figure 1).

(b) Disking of the teeth has advantages. In crowded dentitions with several early or small interproximal carious areas, disking the proximal surfaces removes the dental caries and facilitates hygiene measures. **Figure 2** shows an ideal case for this treatment modality. Restoring all of the proximal lesions exposes the child to considerable treatment. The cost factor also was a consideration. It is also likely that the teeth would exfoliate within two years. Thus disking of these teeth, which does not cause space loss in the anterior areas, is a reasonable option for this type of situation.

The disking technique is fast and usually performed without anesthesia. The drawback is the effect on esthetics, particularly in the upper anterior area. Most parents accept the procedure, particularly if its benefits are explained. Sometimes it is an interim treatment until the child is older and can cope with more sophisticated restorative treatment.

The disking procedure is carried out

with a #169 bur. The carious lesion is removed and fluoride varnish^a is applied to the disked surfaces. The varnish is used to protect the treated surfaces from recurrent caries attack and sensitivity. A weekly treatment using stannous fluoride gel as suggested for the localized application is also recommended. Parents are encouraged to cleanse disked areas by brushing and flossing. This conservative treatment is re-evaluated every three months.

(c) Restoration with composite material can be used to restore proximal surfaces and also buccal and lingual areas such as those evident on teeth #52, #61 and #62 (**Figure 1**). The treatment offers an esthetic result. Greater patient cooperation is needed in comparison to the two previous approaches.

Conventional Class III preparations can be used, although dovetailing (**Figure 4**) may be required more often than with permanent incisors. The modified Class III preparation⁷ is indicated when caries involves the incisal edge of a tooth, but a crown is not always warranted (**Figure 5**).



Figure 4 In conventional Class III restorations dovetails are often required for convenience and increased retention.

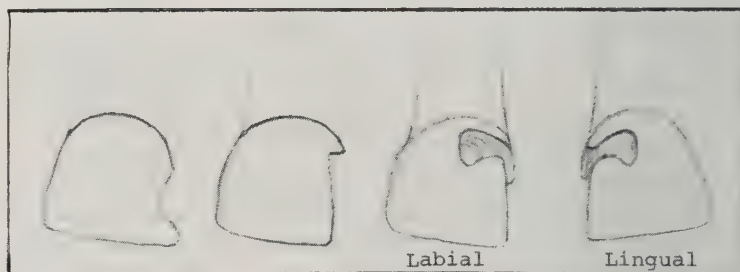


Figure 6 Diagrammatic representation of the Doyle modification for Class III or Class IV preparations.

A #169 bur breaks the contact or removes the thin incisal corner. A #330 bur or an inverted cone is used to complete the preparation. The preparation has labial and lingual dovetails at the cervical third of the tooth (**Figure 6**). The dovetails provide additional mechanical retention in combination with bonding procedures, to overcome the problems associated with the thin enamel and/or the "prismless" enamel in primary teeth.⁸ The clinician is encouraged to use the rubber dam, particularly when treating apprehensive or uncooperative patients.⁹

During all restorative procedures, the need for proper pulpal protection in primary teeth, due to the relative proximity of the dental pulp has to be emphasized. For example: the upper central incisor enamel and dentin thickness is approximately 1.8 mm in the mesial and distal aspects, buccally and lingually it is 2.0 mm at the thickest points.¹⁰ There are several new lining agents available that can be used that are fast setting, which is always advantageous in pediatric dentistry. Light cured calcium

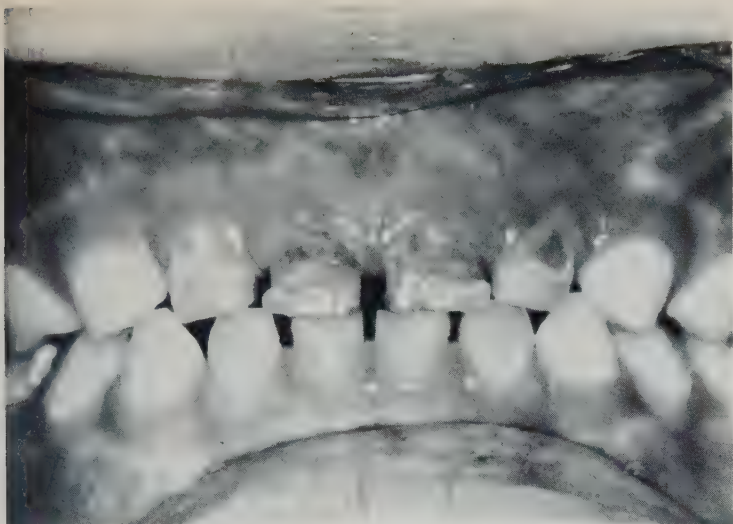


Figure 7 An example of extensive lesions for which conservative restorative procedures will be inadequate.

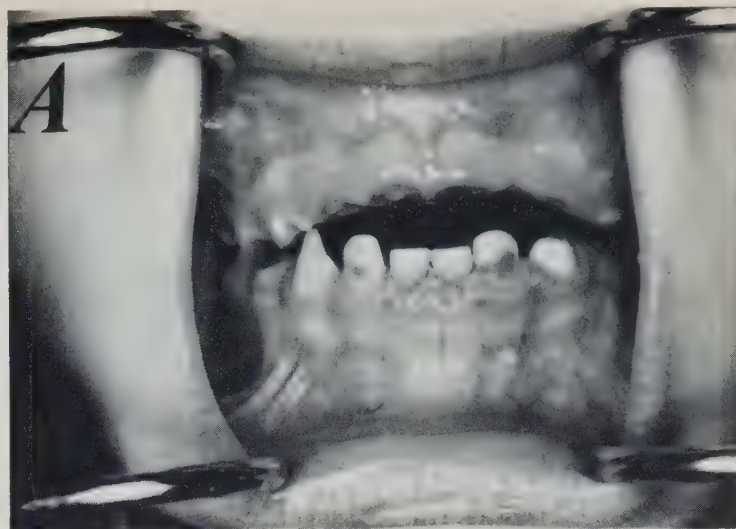


Figure 8a Preoperative photograph of dentition affected by extensive lesions.

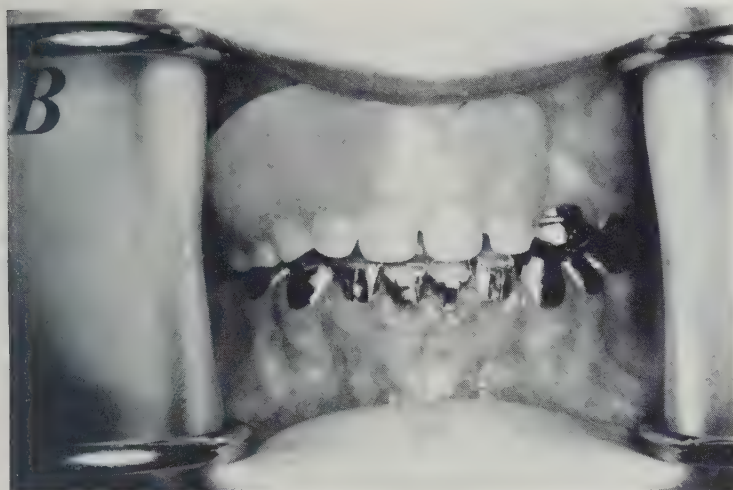


Figure 8b Postoperative photograph showing band adaptation to lower incisors. (Courtesy Dr. G.Z. Wright)



Figure 9 Fitting the polycarbonate crowns. Tabs can be used to help hold the crown and are removed after cementation or bonding to the tooth. (Courtesy Dr. C.S. Friedman)

hydroxide materials offer good protection. Light cured glass ionomer materials may enhance retention but should be avoided in very deep cavity preparations as they could be a pulpal irritant.

2. Extensive Lesions

The appearance of carious upper central and lateral incisors is shown in **Figure 7**. The restoration techniques required for these teeth offer a greater challenge to the clinician. A conservative restoration likely will fail since, after removing the carious tissue, the tooth will be extremely fragile and unable to withstand masticatory forces. Several options are available for treatment. These include:

1. Anterior bands
2. Polycarbonate crowns
3. Stainless steel crowns, with or without esthetic facing
4. Strip crowns

1. Anterior Band

Labial lesions extended over the mesial and distal areas and the band technique was applied to the lower incisors in **Figure 8a**. Since the child already had multiple crowns and extractions throughout the dentition, restoring the extensive lesions with bands was a convenient approach reducing further trauma to the child (**Figure 8b**).

The anterior band technique is unesthetic but it helps the clinician when dealing with extensive lesions or a fractured incisor, particularly in a very young, uncooperative child patient. Sometimes it is used to confine the lesion as an indirect pulp treatment. In other instances, it serves as an interim restoration and a "final" restoration is placed when the child is older. The restoration is helpful when an expedient, low cost, serviceable treatment is needed.

Anterior banding is useful when the carious lesions extend to the lingual and

proximal areas and they are confined to the gingival half of primary teeth. Usually an anterior band is placed without anesthesia after gross caries removal. Carious tissue is removed using a spoon excavator or a slow speed round bur. The lining consists of a calcium hydroxide material if the preparation is deep, and zinc oxide and eugenol is used to fill the cavity. Prefabricated bands in different sizes are available⁶ and are adaptable to the tooth with minimal adjustments. Band cementation with a fluoride releasing cement is desirable, since it may aid in secondary caries inhibition.

2. Polycarbonate Crown

Polycarbonate crowns are available for primary teeth,^c which are esthetically acceptable. When using this restoration it is desirable to have an overjet of at least 1 mm and a shallow to moderate overbite. The crowns tend to be bulky and a traumatic occlusion can cause fracture.

^a Duraflor™, Pharmascience Inc. Montreal, Canada.

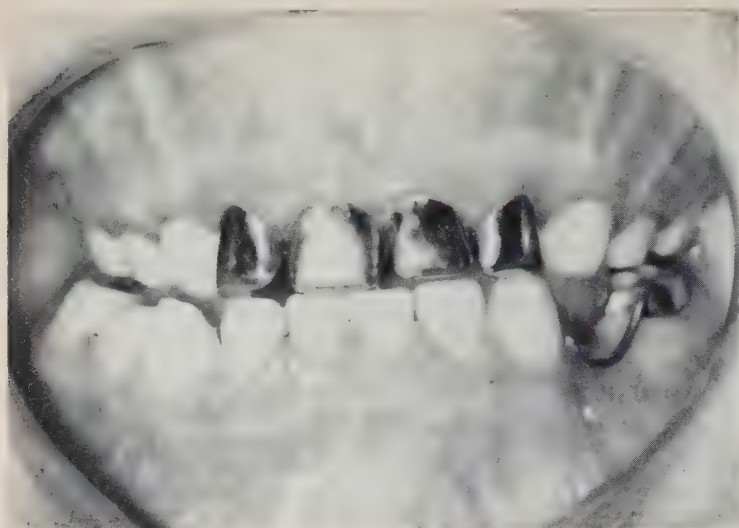


Figure 10 Stainless steel crowns cemented on a 4 year old patient. (Courtesy Dr. W.H. Feasby)



Figure 11 Stainless steel crown with esthetic facing. Arrow points to thin metal border. (Courtesy Dr. C.S. Friedman)



Figure 12a
Appearance of upper incisors with severe carious lesions.

Tooth preparation resembles the technique used for permanent teeth. Prefabricated crowns are available in different sizes and fitted to the teeth as in **Figure 9**.

Venting is created at the incisal aspect of the crown to allow the luting medium to escape and to facilitate crown placement. The crowns can be cemented in several ways. Gonzalez¹¹ advocated cementation of the crown with a combination of methyl methacrylate and a filled composite material. Another technique involves etching the inner crown surface and the tooth, applying bonding agent to both surfaces and joining them together with a composite restorative material. Light cured or autopolymerizing composites can be used, however, before curing takes place, any excess composite should be removed from the gingival margin. Tag removal is performed after bonding procedures.

^b Rocky Mountain[®]
^c 3M



Figure 12b
Postoperative photograph of same patient after treatment with strip crowns. (Courtesy Dr. C.S. Friedman)

3. Stainless Steel Crown

Although acrylic crowns and composite crowns are more esthetic, their retention may be inadequate with extreme destruction of the crown. The extent of crown destruction is a main factor for selecting a stainless steel crown restoration. This type of crown is also recommended in situations where enamel malformation prevents conventional restoration and bonding. The stainless steel crown is advantageous where there is a deep overbite, or bruxism as it is best for withstanding future traumatic forces.

It must be remembered that the crown preparation differs from a permanent crown preparation. No shoulder or retentive areas are created. Most of the retention for stainless steel crowns is achieved mechanically by the metal gripping at the gingival area. **Figure 10** shows the appearance of 4.5-year-old patient after treatment.

When a stainless steel crown is used on incisors or cuspids, the need for esthetics

cannot be overlooked. A composite facing can be created to improve esthetics.

After crown cementation, the labial aspect of the crown is removed using a high speed #330 bur leaving a thin border of metal at the incisal, gingival and proximal areas. Any remaining cement is removed with a medium size inverted cone until enamel is observed. If no enamel is present, enough cement has to be removed to allow a sufficient thickness of the composite material for a good shade. Rough crown edges are smoothed using a green stone or medium disc. The buccal enamel is etched, rinsed and dried. A composite material is used to create an esthetic facing for the crown. The facing is retained by the etching as well as the undercuts created by the inverted cone bur around the metal margin (**Figure 11**). Frequently the undercutting is the sole retentive mechanism as little enamel may be available for etching since the crown was destroyed by caries. The clinician can also make use of glass ionomer



Figure 13 In this case access for dental pulp removal is gained from the labial aspect.

cements to aid in retention of composite materials.

4. Strip Crown

This type of restoration, which uses a celluloid crown form, is esthetic but more fragile than a stainless steel crown. It is probably comparable to the polycarbonate crown for resistance to fracture. It should not be used in cases of severe bruxism or excessive overbite since this will subject the crowns to trauma and lead to fracture and/or excessive wear. It is not advocated in cases of severe enamel destruction since retention would be severely compromised as tooth structure is needed for bonding.¹²

Crown selection is based on the mesio-distal dimension of the tooth to be restored. If the incisal edge is severely destroyed, measure the antimere. After obtaining anesthesia, isolation is crucial. Retracting the gingiva with dental tape helps expose the gingival enamel and control gingival bleeding. Start by reducing the incisal edge and proximal surfaces by approximately 1 mm with a #169 bur. A shoulder of approximately .25 mm is created at the gingival margin on the labial surface. Grosso¹² recommends a .25 mm reduction of the labial and lingual surfaces to remove any aprismatic enamel and enhance acid etching. Caries is removed using a slow speed round bur. Pulpal protection is placed over dentinal areas. A previously selected celluloid crown is trimmed and fitted on the tooth. Glass-ionomer is recommended as a liner for its bonding capabilities to dentin.¹³ While etching the tooth for 60-90 seconds, a vent is made at the lingual-incisal edge. After thoroughly washing and drying the tooth, bonding agent is placed with a brush and cured. The crown form is filled and placed on the tooth removing excess material with an explorer before

curing. There must be at least 1 mm of resin bulk on the labial for good shading. While exerting slight finger pressure to the crown, allow the composite to cure. The crown form is removed with a sharp instrument such as an explorer or gold knife. Margins are finished with a composite, flame-shaped finishing bur. Although not always needed, the crown can be smoothed with finishing discs. Every effort is made to select the best fitting crown as it minimizes finishing. Finally the occlusion is checked for any interferences. **Figures 12a and 12b** show the before and after treatment result using a strip crown.

3. Severe Lesion

The treatment and restoration of a pulpal involved tooth is probably one of the most challenging problems. If the tooth requires a pulpotomy or pulpectomy and there is minimal loss of tooth structure, the clinician can use some of the conservative treatment modalities previously described in this article.

Access for dental pulp removal may be gained from the labial aspect¹⁴ (**Figure 13**). Using this approach has advantages. It makes access and visibility easier for the operator. Since discoloration usually occurs pre or post pulp therapy, the labial access followed by composite restoration solves the problem of discoloration.

For the severely carious tooth with inadequate structure for retention, requiring endodontic therapy, a post and core technique can be used. After proper anesthesia and isolation, the pulpectomy procedure is completed. After the filling material has set, a #6 round bur is used to clean the canal 4 – 5 mm below the gingival margin. Kenny¹⁵ suggests creating an undercut in the dentin to increase retention. The new bonding agents also

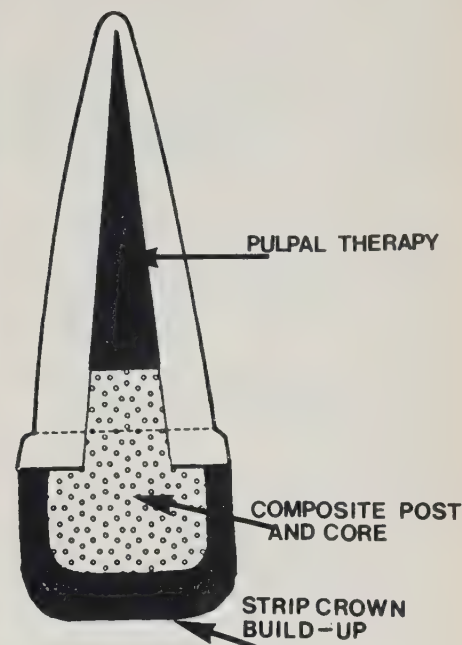


Figure 14 After pulpal therapy, a post and core is created and the crown is built up with the use of a crown form.

tend to serve the same purpose. Following etching for 30 seconds, rinse, dry, and apply a dentin bonding agent, curing it as per manufacturer's instructions. Composite material is added to the canal and cured in small increments until a post and core is created. The core (simulated crown) is then prepared to receive a strip crown. A crown form is then trimmed and adapted to the core. Residual enamel is etched for 30 seconds. After washing and drying, bonding resin is placed and cured for 30 seconds. During this time the assistant can create two vents at the incisal edge and fill the crown form with composite resin, adapt the crown on the core, trim and finish as with the procedure described for the strip crown. The diagram in **Figure 14** shows the tooth preparation required for completion of this technique.

Summary

The present article reviewed some of the treatment modalities for restoring anterior teeth in the primary dentition. It divided the treatment types into three classifications based on the severity of the carious lesions or injury. Treatments that are not usually found in current textbooks were outlined and commented upon. It was suggested that dentists have to consider a wide range of treatment options since factors such as the age of the child, ability to

cope with treatment and cost of treatment have to be taken into account. Δ

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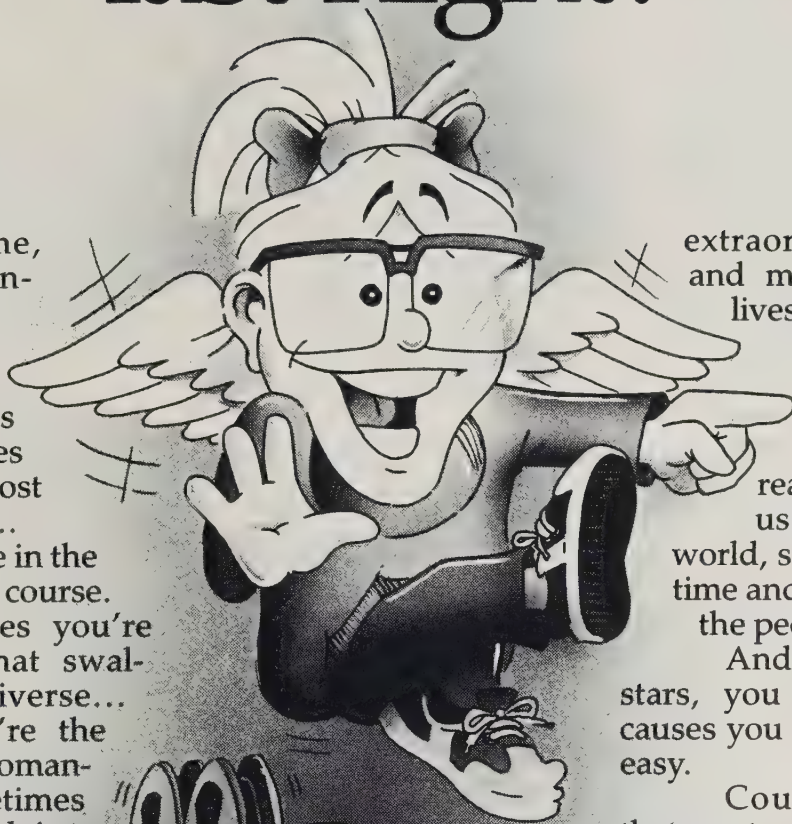
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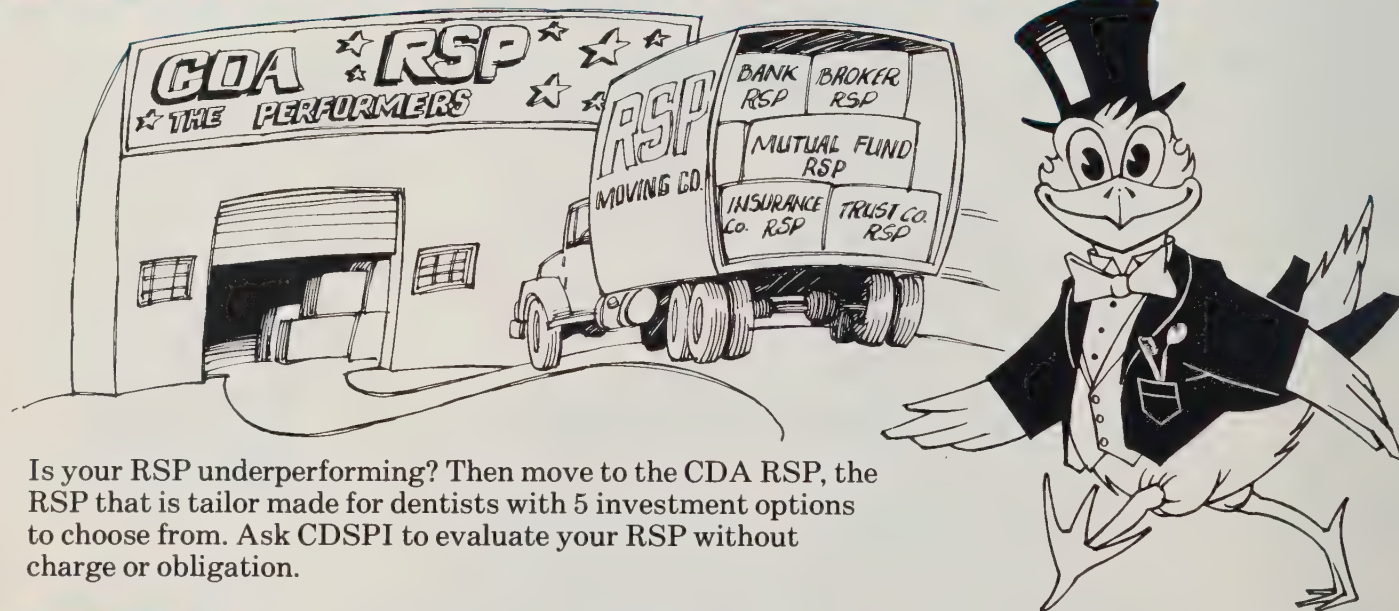
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A survey of Canadian pediatric dentists: Practice characteristics and views on dental education

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ABSTRACT

The success of caries prevention in the developed countries has resulted in a marked decline in dental disease, especially in pediatric divisions of dental faculties, where an acute problem is finding patients to provide students with the clinical experience they will require in practice. It has become apparent that this changing disease pattern should be accompanied by a re-thinking of educational strategies and objectives to mirror the times and projected trends. While changes in educational strategies will likely be initiated from within the dental faculties, debate and discussion should include those in private practice as well as the academic field. With this in mind, 85 pediatric dentists nation-wide were surveyed regarding their views on educational matters as well as characteristics of their practice and their general profiles. There was widespread agreement on the need for changes in educational strategies and suggestions were made regarding the directions these changes should take.

SOMMAIRE

Dans les pays industrialisés, le succès de la prévention des caries a entraîné une baisse marquée des maladies dentaires, surtout dans les divisions de pédiatrie des facultés de médecine dentaire où il est très difficile de trouver des patients pour les étudiants qui font leur apprentissage clinique. Il apparaît donc que ce changement dans l'évolution des maladies devrait nous amener à repenser les stratégies et les objectifs de l'enseignement afin de pouvoir refléter les besoins de l'heure et les tendances prévues. Bien que ce seront vraisemblablement les facultés de médecine dentaire qui entreprendront de changer les stratégies de l'enseignement, il conviendrait que les praticiens privés tout comme les professeurs participant aux débats et aux discussions préalables.

Aussi est-ce dans cette intention qu'on a interrogé 85 dentistes pour enfants du pays tout entier. On a voulu connaître leurs opinions sur l'enseignement, les caractéristiques de leurs pratiques et leurs profils généraux. En général, ils sont d'avis que les stratégies de l'enseignement doivent être changées et ils ont fait des suggestions touchant le sens dans lequel ces changements devraient se faire.

In our child-oriented society, preventive dentistry has naturally focused on the young patient. This is not only because children represent our future, but it also makes good scientific "sense" to implement preventive measures and habits in childhood.

For decades, the thrust in dental research has been to prevent dental disease. The "caries free" society was an ultimate self-set goal for the dental profession. Indeed, that goal has not yet been realized but, increasingly, we now realize that it is almost at hand in all areas of the world where proven preventive measures have been implemented.

The general decline in dental caries has been increasing over the past decade. This has fostered discussion on the future of the profession and the implications of declining dental disease on the teaching and practice of dentistry. This changing pattern has not gone unnoticed by those involved in dental education as, not only must programs reflect current and future trends, but also, this must be done while continuing to teach traditional dentistry hampered by an ever dwindling supply of patients. The pressure on dental educators is compounded further by the realization that they must teach their students that which will prepare them for their futures and also, they are accountable to these students in justifying the pertinence of what is taught in light of current and projected trends in dental disease.

The marked decline in dental caries has been thoroughly documented. At the First

International Conference on the Declining Prevalence of Dental Caries,¹ held in Boston in 1982, 16 speakers representing nine developed nations presented data from their respective countries, indicating declines ranging from 10 to 30 per cent in non-fluoridated areas (Ireland) to a 57 per cent decline in fluoridated communities (England). A paper from Denmark also indicated that the decline apparent in children was maintained into adulthood, with the expectation that the future adult population will also present fewer dental treatment needs. Other studies²⁻⁹ confirmed similar findings.

Causes for these dramatic declines were difficult to establish. Many factors were suggested as being contributory, including the use of fluoride in its various forms (with widespread use of fluoride toothpastes deserving special mention), changing dietary habits, the beneficial effects of child dental health services and the widespread use of antibiotics which may inhibit cariogenic microorganisms.

Most pediatric dentists and dental educators will readily admit that we are at a point where changes and adjustments to dental curricula need to be studied and implemented. Ultimately, it will be those in the academic circle, in close consultation with their colleagues in practice, who will initiate and implement the necessary changes.

With this in mind, a questionnaire was designed to solicit the views and opinions of pediatric dentists on a national scale regarding the future directions the specialty should take. Results are presented here.

Materials and methods

A questionnaire was designed and mailed to 136 pediatric dentists practising in Canada who were listed in the 1987 membership directory of the Canadian Academy of Pediatric Dentistry and/or the 1988 directory of the American Academy of Pediatric Dentistry. The questionnaires represented the total num-

ber of pediatric dentists in Canada with membership in either of these two professional associations. The mailings included a covering letter explaining the purpose of the survey, as well as a stamped, self-addressed envelope.

The questionnaire solicited responses to items related to year of graduation, practice location, the use of adjuncts for behaviour management, information regarding patient drawing areas, main area of professional endeavour, as well as views on curricular matters and concerns. After a suitable waiting period (approximately three months), the returned questionnaires were evaluated and results tabulated.

Results

Of the 136 questionnaires mailed, two were returned due to address changes. Of the remaining 134, 85 dentists responded (63.4 per cent).

TABLE I

Distribution of Respondents by Province

PROVINCE	No.
Ontario	35
Quebec	19
Alberta	12
British Columbia	11
Manitoba	4
Saskatchewan	3
Nova Scotia	1
TOTAL	85

Table I shows the distribution of respondents by province. **Table II** shows the year in which they qualified, with their primary dental degree as well as their specialty certification. The majority obtained their DDS as well as their specialist certification between 1971 and 1980 (38.8 and 52.9 per cent respectively).

Table III shows the respondents' main area of professional endeavour. The majority (58.5 per cent) are in full-time private practice. There is quite a cross-over between the different endeavours. For example, some of those in full-time practice also had a part-time academic appointment and most of those in full-time academics also practised part time. Each practitioner was, however, categorized only once in that area defined by him/her as the main endeavour area.

General characteristics of the dental practice

In response to a question regarding their patient drawing area, most pediatric

TABLE II

Years in Which Qualifications Were Achieved

	YR. OBTAINED DDS		YR SPECIALIZED	
	No.	%	No.	%
1941-50	4	4.7	2	2.4
1951-60	12	14.1	2	2.4
1961-70	30	35.3	21	24.7
1971-80	33	38.8	45	52.9
1981 +	6	7.1	15	17.6
TOTAL	85		85	

TABLE III

Respondent's Main Area of Professional Endeavour

Full-Time Practice		Part-Time Practice		Salaried position incl. academics		Retired	
n	%	n	%	n	%	n	%
48	58.5	19	23.2	14	17.1	1	1.2
TOTAL N = 82							

dentists reported that they acquired their patients from urban communities (76.5 per cent) while only 4.7 per cent had their practice in totally rural communities; 18.8 per cent reported a patient load comprised about equally from both rural and urban areas (**Table IV**). No response was solicited regarding presence or absence of satellite practices.

In response to a question regarding fluoride exposure, 23.5 per cent of dentists reported that their patients resided in areas with fluoridated water, 28.2 per cent reported that the water supply is non-fluoridated, 30.6 per cent reported that most of their patients reside in fluoridated areas, while 15.3 per cent have most patients residing in non-fluoridated areas (**Table V**).

In answer to a question regarding hospital privileges and the use of adjuncts to manage behaviour, 80.0 per cent of respondents enjoyed hospital privileges, permitting them to treat patients under G.A. There was a tendency for those having hospital privileges to rely less on other adjuncts compared to their counterparts not having these privileges. Of the total respondents, 30.9 per cent used

TABLE IV

Patient Drawing Areas for Practice

URBAN	RURAL	EQUAL MIX
76.5%	4.7%	18.8%

both N₂O/O₂ analgesia as well as other forms of sedation in their practices; 25.9 per cent used sedation alone, 16.0 per cent used N₂O/O₂ analgesia alone, while 27.2% did not use any in-office pharmacological means for child management (**Table VI**).

Pediatric dentists were asked if they had noticed a general decline in income over the last five years. Eighty-one dentists responded and of those, 66 (81.5 per cent) reported no decline and the remaining 15 (18.5 per cent) reported a decline. Some cited an increase in overhead costs as a reason for the decline and some of those reporting no decline commented that more effort was needed to maintain their income level (perhaps additional working hours, performing services previously delegated to auxiliaries, etc.).

TABLE V

Patient Exposure to Fluoridated Water Supply

F + ve	F - ve	Mostly F + ve	Mostly F - ve
23.5%	28.2%	30.6%	15.3%

A question regarding the current frequency of some traditional dental services as compared to those five years ago was posed to pediatric dentists. This was undoubtedly a difficult question to respond to and depended more on the individual dentist's subjective assessment or "feel" for general, perhaps subtle, shifts in services provided over a five-year span. More accurate measurements would have necessitated a scrutiny of office records and would have required a commitment in terms of man-hours that would have been impractical for most offices to comply with. A 10-year time span was also considered with the thought that more major shifts could be discerned. However, this was rejected as it would have excluded those in practice less than 10 years. **Table VII** shows the procedures rated and responses obtained. Generally, there appeared to be no major shifts in the frequency of services performed over the five-year span. A slight tendency was discerned which indicated that pediatric dentists were placing more sealants and composites and less amalgams and stainless steel crowns. They were also performing less extractions and pulpotomies.

Views on pediatric dental education

Asked if graduate pedodontic programs in North American dental schools should be gradually phased out, remain unchanged or acceptance quotas decreased, the majority (58.0 per cent) felt that present acceptance quotas should be decreased. No changes in present acceptance quotas was supported by 35.8 per cent of respondents, while only 4.9 per cent felt that these programs should be gradually phased out. One respondent (1.2 per cent) accused this investigator of being overly pessimistic and expressed the opinion that pedodontic graduates should be increased. No provision was made for a response denoting an increase in graduate enrolment and so the criticism is accepted as being valid. Certainly, the premise of the survey implies a pessimistic outlook and this may slant responses towards that view (N=81 responding to this question).

A further valid point was that a distinction should be made between graduate pediatric dentistry programs in Canada and the U.S., since there is only one program in Canada, as compared to the multitude of programs in the U.S.

Three questions in the survey invited opinions on how graduate and undergraduate curriculum content in pediatric

TABLE VI

Use of Pharmacologic Adjuncts to Manage Behavior

N ₂ O/O ₂		Sedation		N ₂ O/O ₂ & Sedation		Neither	
n	%	n	%	n	%	n	%
13	16.0	21	25.9	25	30.9	22	27.2
TOTAL N = 81							

dentistry should change and what topics would be most pertinent in planning future continuing education courses. Responses to these questions were in the form of comments and frequently the same or similar response applied to all three. No figures or tables will be presented here as the results are essentially a compilation of views which will be presented in the discussion.

Discussion

While it was hoped that the response rate would have been higher, a rate of 63.4 per cent is acceptable and represents a wide cross-section of pediatric dentists on a national scale.

It was apparent that there is some concern about the future direction the specialty should take in view of the changing pattern of dental disease in children. The impact of this change was not reflected in a decline in income for the majority of respondents. It was, however, apparent that maintaining the same income level necessitated certain changes, such as working longer hours or performing services previously delegated to auxiliaries.

Some reported that they were now more diligent in patient recall systems so as to assure a steady patient flow. One practitioner stated that he has started issuing a newsletter which he periodically sends to patients. Another mentioned incentives in the form of discounted dental fees for those who refer a new patient.

Since most of the respondents qualified between 1971 and 1980, it is likely that those in established practices may not, as yet, have experienced income declines. The same may not hold true for those with less established practices and for future graduates.

A discussion of practice incomes should also take into account the location and density of practitioners in an area. Most of the respondents (76.5 per cent) practise in the major urban areas. It is probable that those reporting an equal number of patients from both urban and rural communities (18.8 per cent) are located in urban centres with wide rural drawing areas and/or were referring to satellite practices. It is rather discouraging that only 4.7 per cent of respondents had practices in rural communities, since any-

TABLE VII

Current Frequency of Dental Procedures as Compared to Frequency Five Years Previously

PROCEDURE	N	FREQUENCY					
		Same		Less		More	
		n	%	n	%	n	%
Prophy/F	74	62	83.8	4	5.4	8	10.8
Sealants	72	30	41.7	10	13.9	32	44.4
Diet Analysis	66	53	80.3	7	10.6	6	9.1
Minor Orth	72	42	58.3	14	19.4	16	22.2
Amalgams	75	33	44.0	29	38.7	13	17.3
S.S. Crowns	74	27	36.5	31	41.9	16	21.6
Pulpotomy (Primary)	73	28	38.4	30	41.1	15	20.5
Extractions (Non-Ortho)	74	44	59.5	22	29.7	8	10.8
Root Canal (Primary)	69	41	59.4	15	21.7	13	18.8
Space Maintenance	74	46	62.2	17	23.0	11	14.9
Composites	75	23	30.7	20	26.7	32	42.7

one who has worked in rural and northern communities will attest that there is a dire need for pediatric dental services in these areas.

This unequal distribution results in a situation in which rural segments of the child population are under-served, while those in urban areas may be over-served. In fact, the comment made by one respondent that graduate pediatric programs should be increased, acquires an additional validity if one takes into account the total child population in Canada. In the 1986 national census,¹⁰ there were 5,028,340 children in Canada between the ages of 1 and 14 years. Health and Welfare Canada's Census of Health Personnel¹¹ indicates that there were 145 certified pediatric dentists in Canada in 1985. These figures give an appalling ratio of one pediatric dentist for every 34,678 children in that age group. This obviously does not represent the true picture as child dental services are not delivered exclusively by pediatric dentists. The ratio between the total population and active licensed dentists in 1985 is a comparatively more acceptable — 1:1,958.

The fact remains that the decline in dental disease is not a reality for vast segments of our child population in under-served areas. It may be prudent to find some formula whereby future policies for acceptance of undergraduates as well as graduate dental students be linked to a commitment to provide services to under-served communities. Additionally, water fluoridation should be implemented in those areas not currently fluoridated. As of December 1976, the percentage of Canadians with water supplements using natural and controlled fluoridation was only 46.4 per cent.¹²

The finding that pediatric dentists were placing less amalgams and stainless steel crowns as well as performing less pulpotomies and extractions is not surprising and generally reflects the improved dental health of children. However, as mentioned before, this may not be a generalized phenomenon and mainly reflects the dental health of children in over-served areas.

Regarding views on curricular matters, predictably an overwhelming majority of respondents felt that they should be performing more orthodontics. This has been debated since both specialties were recognized as distinct and separate entities. However, the comments made indicated that most pediatric dentists did not wish to be orthodontists. Rather, what they wanted was a greater knowledge of growth, development and diagnostic

skills that would enable them to provide preventive, interceptive and simple corrective orthodontics to their patients as part of their overall service. Pediatric dentists felt that they should no more refer a child with "minor" orthodontic problems to an orthodontist, than they would refer a child with caries to a specialist in restorative dentistry.

While this may be considered by orthodontists to be an encroachment, it is a reality that most pediatric dentists are already providing these services, either on their own or in consultation with their orthodontic colleagues. Since that is the case, their training should lay more emphasis on those orthodontic aspects of child dental care. Indeed, while each specialized field will initiate its own self examination when deemed appropriate by its members, it is well to note that changing dental disease patterns will not exclusively affect the specialty of pediatric dentistry. Other specialty areas including orthodontics will, in time, also need to assess, evaluate and define their future direction. Perhaps the emphasis in orthodontics will, in the future, shift more towards adult orthodontics, orthognathic surgery, orthodontic/periodontal interactions, to name only a few areas worthy of expansion.

Pediatric dentists did not single out orthodontics as the only specialty that their training should better equip them for. Other topics they felt should be emphasized on both graduate and undergraduate levels included:

- 1 — Dentistry for the handicapped, sedation and hospital dentistry
- 2 — Cosmetic restorations and new material developments
- 3 — Child psychology
- 4 — Management of office staff
- 5 — Computers in office management
- 6 — Infant care
- 7 — People skills (e.g. dealing with parents, patients, hospital staff, sales representatives, etc.)
- 8 — Asepsis and sterilization
- 9 — Sport injuries
- 10 — Medical aspects of patient management (syndromes, oncology, hematology, pharmacology, neuromuscular disorders, etc.)

Many of these topics form part of graduate and undergraduate programs in pediatric dentistry. However, most are accorded a few lectures at some point during the course, with little or no practical experience. The point to be made is not necessarily the introduction of new curricular material but rather a shift in emphasis from the "drill and fill" school of thought to dealing with and delivering

necessary dental services to patients who may have dental needs of a non- "drill and fill" nature.

The comments made by the respondents acquire an added validity if one examines most current pediatric dentistry texts. While all are carefully written and reflect advances and trends in the field, it is clear that most follow the same format with the emphasis accorded to traditional topics in pediatric dentistry. This is not meant to imply a criticism of these worthy texts, and one has only to recall the comments made regarding the under-served child populations to realize that traditional dentistry will be a needed and vital service for many years to come. Rather, perhaps a first step in change may be the development of a "non-traditional" pediatric dentistry text, with the emphasis on the concerns voiced by the respondents in this survey as well as other diverse topics. This text would not necessarily be a substitute for those currently available, but would perhaps constitute a different direction in knowledge, technique and skills for the graduate student as well as for more advanced, motivated undergraduates. Also, continuing education planners should perhaps take note of the topics expressed here for their future planning.

Regarding undergraduate curricula and how to cope with a dwindling patient supply, two suggestions are worthy of mention:

- a) Developing off base programs in hospitals and remote communities and/or expanding those already in existence.

Some dental faculties already have such programs in place. At the University of Alberta, final year students spend one month equally divided between a hospital rotation and a rotation in mobile dental clinics in three Northern Alberta communities. These programs are of immense practical value to students, in terms of acquiring clinical and diagnostic skills as well as gaining confidence in their abilities. Another speculated benefit may be that exposure to those areas will allow some students to see the potential there and consider setting up practice in these or similar communities. Additionally, dentally under-served populations (such as refugees and new immigrants) may also be found within metropolitan areas. Means for locating and recruiting these patients should be actively explored by dental faculties.

- b) Having the first year of pediatric dentistry training mandatory for all students, while the final year (or portions of it) be elective with respect to

pediatric dentistry (and perhaps other specialty areas as well).

Thus, more patients would be available for the fewer students selecting this elective. An additional benefit would be the attraction of only those students motivated in that direction. The experience may further motivate these students into opting for graduate studies or, if not, then perhaps form a new class of mini specialists in pediatric dentistry who also practise general dentistry. Indeed, that is a train of thought that may be worth considering by all specialties and curriculum planners. A few of these mini specialists will likely set up practices in underserved areas, while those not electing pediatric dentistry would perhaps form a wider referral base for specialists and other mini specialists.

Finally, the declining disease pattern is in itself a phenomenon worthy of praise. Not only does it crown the efforts of dental researchers, educators and practitioners and maintains our stature in the public eye, but also, it provides us with the opportunity to re-evaluate and define our goals and aspirations for the future and assures the continued vitality of our profession.

Summary and conclusions

The documented decline in dental caries in the developed countries has caused dental educators to investigate the impact of these changes on the future teaching and practice of pediatric dentistry. To assess this development, 85 pediatric dentists on a national scale were surveyed regarding their views on the direction of future dental education. The survey also solicited information regarding their general profiles and practices. It was concluded that:

1. Preventive services have resulted in caries decline only where these services are available. Populations without these services remain underserved.
2. There was a detectable concern among pediatric dentists regarding the future of their specialty area.
3. Most pediatric dentists had not experienced an appreciable loss in income over a five-year span, although it appeared that a more concentrated effort is now being expended to maintain that income level.
4. The frequency of most routine child dental services in practice did not appreciably change over a five-year span. A slight tendency was noted for pediatric dentists to be placing less amalgams and stainless steel crowns

and performing less extractions and pulpomies.

5. There was overwhelming support for the need to change current curriculum content so as to diversify the practice of pediatric dentistry into other areas of child dental services, with an emphasis on preventive and interceptive orthodontics.
6. Undergraduate curricula should have a strong off-base component as part of the basic course.
7. Undergraduate curriculum planners may consider having pediatric dentistry as an elective course for final-year dental students.
8. Some linkage between future enrolment levels and a consideration of dental needs of under-served areas may be appropriate.
9. Changes and redefinition of dental education goals and objectives should be discussed by all specialty areas in a coordinated effort, so as to achieve uniform and clear educational policies. Δ

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Reprint requests to Dr. ElBadrawy.

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Rubinstein-Taybi syndrome

W.S. Cheung, BA, DDS, FRCD(C)
Coquitlam, B.C.

ABSTRACT

A case of Rubinstein-Taybi syndrome (RTS) is presented. The syndrome is characterized by broad thumbs and great toes, peculiar facial features and mental retardation. The oral findings of the patient are reported, and the dental management is discussed.

SOMMAIRE

Voici le cas d'un patient affligé du syndrome de Rubinstein-Taybi (SRT) se caractérisant par des pouces durs et de grands orteils, des traits faciaux curieux et une arriération mentale. On présente les manifestations buccales du syndrome et on parle de la façon de traiter le patient sur le plan dentaire.

In 1963, Rubinstein and Taybi¹ first reported seven cases of mental retardation syndrome in which all the patients presented with broad thumbs and toes and similar facial abnormalities. This syndrome was later referred to as Rubinstein-Taybi syndrome (RTS).^{2,3} Until now, there was no definitive pathognomonic criterion to diagnose the syndrome. Patients with RTS usually presented similar typical clinical findings that distinguished them from other mentally retarded patients. However, Coffin² speculated that the syndrome may occur in incomplete form, in which the mentally retarded patients have slightly abnormal thumbs and vaguely suggestive facial features. The etiology of RTS is unknown. There is no metabolic disorder detected in cases of RTS.¹⁻⁴ Occurrences in monozygotic twins⁵ and siblings³ have been reported. Interestingly, a case has been reported in one of a pair of monozygotic twins.⁶ Whether there is genetic implication is still controversial. Chromosomal change associated with RTS has been suspected,⁴⁻⁶ but never confirmed.^{1,5-7} It is possible that the statement made by Rubinstein and Taybi¹ in 1963 that "These tools of investigation are still relatively primitive, and the normal amino acid and chromosome findings . . . do not rule out minor but possibly significant abnormalities in

either of these areas" still holds true today.

This article presents a case of RTS, with emphasis on the intraoral findings and the dental management of the syndrome.

Case report

The patient, a Caucasian female, had been diagnosed as having Rubinstein-Taybi syndrome a few weeks after she was born. Clinical extra-oral examination revealed most of the typical features of the syndrome as described by Rubinstein and Taybi:¹ short stature with small cranium, moderate mental retardation, palpebral fissures slanted downwards, slightly micrognathic, beaked nose with nasal septum extending below alae nasi, presence of epicathal folds, low-set auricles, broad thumbs with radial angulation and broad toes, peculiar stance and gait (Figs. 1 and 2).



Fig. 1. Frontal view of patient at age of 10.



Fig. 2. Side view of patient at age of 10.

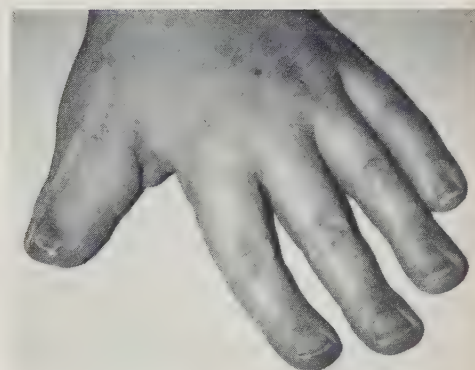


Fig. 3. Patient's hand, showing scar on thumb from previous corrective surgery.



Fig. 4. Patient's feet, showing deformed toes.

The patient's family history was non-contributory. She was the eldest child in the family and the product of a full-term, uneventful pregnancy. Both parents were healthy and non-consanguineous. She had two younger sisters who were both normal. Medical history included recurrent respiratory infections — another characteristic of the syndrome.^{1,4-6} Several plastic surgical operations had been performed to correct her deformed thumbs and toes (Figs. 3 and 4).

The patient started routine dental care at the age of five years. Due to her moderately retarded mentality and recalcitrant behaviour, only a visual examination could be obtained at each visit. At the age of 10, several small pit carious lesions were noticed on the lingual surfaces of her maxillary permanent incisors. It was then suggested that she should have a complete dental examination and treatment under general anesthesia.

The patient was admitted to the day care surgery unit of a local hospital where complete clinical and radiographic dental examinations were carried out. She was found to have a high-vaunted constricted palate with bilateral marginal posterior cross-bite. Her dental development was compatible with her chronological age. Pit caries were noticed on the lingual surfaces of all the maxillary incisors, where deep lingual pits were evident along with large cingula. Size and morphology of the other teeth appeared to be within normal limits. Moderate crowding was noted in both arches (Figs. 5 and 6).

The carious teeth were restored with preventive resin and fissure sealants were applied to all the first permanent molars. Dental prophylaxis and topical fluoride treatment were also performed.

Discussion

A case of Rubinstein-Taybi syndrome has been presented. The oral and dental findings are in agreement with most of those reported previously.^{1-6, 8-10} Gardner et al⁸ examined the dental morphology of 14 cases of RTS; they noticed two exhibited talon cusps and three others exhibited prominent cingular on the maxillary incisors. Kinirons⁹ reported a case of RTS with a dens invaginatus on a maxillary lateral incisor. This anomaly could be an isolated incidence since it has not been reported in other cases.

In review of the literature, constricted high arched palate appears to be the other consistent finding in patients with RTS, as well as broad thumbs and toes, abnormal facial features and mental deficiency. The only exception is in the study by Padfield et al,⁴ in which they noted one of the



Fig. 5. Patient's constricted maxillary arch.

17 patients with RTS did not have a high arched palate, but no photographs were shown. It would seem appropriate to use this characteristic oral finding — high arched palate — to support the diagnosis of the syndrome in future.

Since the mental deficiency of patients with RTS varies considerably,^{1,3,4} only those who cannot cope with routine dental care in the office should be considered for treatment under general anesthetic.

Preventive fissure sealants should be applied on the deep lingual pits and fissures of the maxillary incisors, when present. If pit caries already exists, preventive resin restorations should be considered. Talon cusps, when present, may interfere with the occlusion. In this situation, the cusps could be reduced gradually to clear the interference.¹¹ If clearance still could not be obtained, extensive restorative and endodontic treatment would be necessary. When sufficient cooperation can be obtained from the patient, minor orthodontic treatment can be undertaken to expand the palate and correct the posterior cross-bite.

As in all mentally handicapped patients, routine daily oral hygiene should be carefully monitored. A nutritional and non-cariogenic diet should be implemented. Regular dental care should be followed to ensure sound dental health. △

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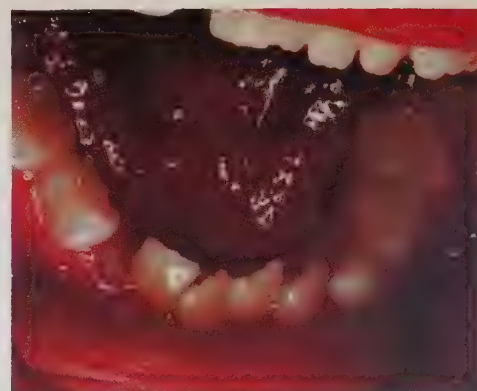


Fig. 6. Patient's mandibular arch showing moderately crowded dentition.



Fig. 7. Lingual view of the maxillary incisors, showing deep lingual pits with large cingula.

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2. Kilpatrick, H.C. Work simplification in dentistry, ed. 2, Philadelphia, Saunders, 1964.

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Diagnostic différentiel des masses cervicales²

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RÉSUMÉ

Cet article constitue la deuxième partie d'une publication consacrée au diagnostic différentiel des masses cervicales. Ce second exposé s'attarde plus spécifiquement au sujet des masses non ganglionnaires et met l'accent sur le diagnostic différentiel ainsi que les caractéristiques cliniques de ces différentes masses.

ABSTRACT

This is the second part of an article on the differential diagnosis of cervical masses. It deals more specifically with non ganglionic masses and emphasizes the differential diagnosis as well as the clinical characteristics of these different masses.

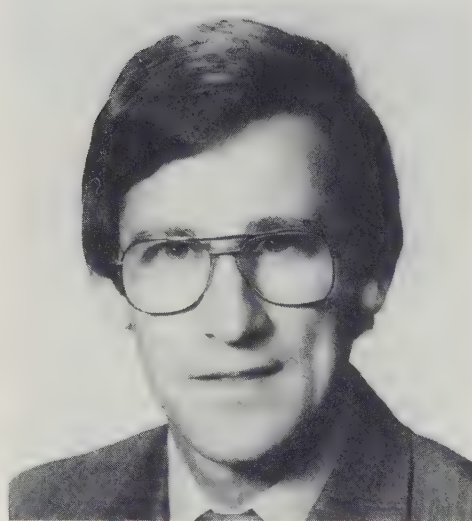
Masses non-ganglionnaires

Plusieurs types de masses non-ganglionnaires peuvent être observées à l'examen de la tête et du cou. Leur nature est variée (tumeur salivaire, pathologie thyroïdienne, anomalie de développement. . .) et rend ainsi complexe toute classification basée sur une approche étiologique. Aussi, pour en faciliter le diagnostic différentiel, ces masses peuvent être avantageusement regroupées en quatre catégories selon leur distribution clinique, soit masses de la région sous-maxillaire, de la région rétro-mandibulaire, de la ligne médiane et de l'aspect latéral du cou.

Masses de la région sous-maxillaire

Si l'on fait exception des adénopathies, les cellulites d'origine dentaire et les diverses pathologies des glandes sous-maxillaires constituent les principales causes de masses observées dans la région sous-maxillaire.

Les **cellulites d'origine dentaire** se caractérisent par un gonflement d'apparition rapide, douloureux, mal circonscrit,



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en rapport avec la présence d'une infection d'une dent inférieure. Elles s'accompagnent généralement d'une certaine atteinte de l'état général, avec fièvre et leucocytose démontrable à l'héogramme. Leur diagnostic pose rarement de difficulté.

Les **tumeurs de la glande sous-maxillaire** se présentent typiquement comme une masse ferme, isolée, d'évolution progressive, dont la croissance peut souvent s'échelonner sur une période de plusieurs années dans les cas non compliqués. Les formes bénignes et malignes s'observent en proportions égales au niveau de la glande sous-maxillaire, l'adénome pléomorphe (tumeur mixte) constituant la majorité des tumeurs bénignes, le carcinome adénoïde kystique, le carcinome épidermoïde, la tumeur mixte maligne et le carcinome muco-épidermoïde étant responsables dans l'ordre de la majorité des tumeurs malignes¹. Bien qu'il soit difficile de présumer cliniquement de la nature bénigne ou maligne d'une tumeur salivaire, la présence de douleur, d'augmentation rapide de volume, d'induration et de fixation aux structures sous-jacentes doivent être considérées comme autant d'éléments suggestifs de malignité^{1,2}. Les formes

bénignes, de croissance lente, doivent être occasionnellement distinguées d'un **lymphome isolé**.

Les gonflements associés à la présence d'un **sialolithe** ou d'une **stricture du canal de Wharton** sont typiques. Ils sont intermittents, douloureux et suivent de près la prise d'un repas. La glande devient alors tendue, sensible, déformée par une accumulation de salive qui ne peut être excrétée en raison d'une obstruction canalaire. (cf. fig. 1) En l'absence de traitement approprié ou de résolution spontanée, la glande devient progressivement le site de changements inflammatoires désignés de sialadénite chronique. L'anamnèse est fortement suggestive en ce qui concerne ces pathologies des voies excrétrices. Le diagnostic se prouve par radiographie occlusale ou par sialographie. La canulation du canal de Wharton peut être diagnostique ou thérapeutique, permettant de démontrer la présence d'une stricture soupçonnée cliniquement, tout en favorisant l'expulsion d'un sialolithe ou de concrétions muqueuses non calcifiées. La sialadénite chronique obstructive constitue la principale cause de masse observée au niveau de la glande sous-maxillaire³.

Les autres causes de masses d'origine salivaire comprennent les **sialadénites aiguës bactériennes ou virales**⁴, le **syndrome de Sjögren**^{1,2,4,5}, la **lésion lympho-épithéliale bénigne** (maladie de Mikulicz)^{1,2}, les **atteintes leucémiques, lymphomateuses et tuberculeuses**^{1,2} (anciennement désignées de syndrome de Mikulicz), la **sarcoïdose**^{1,2,6}, la **fibrose kystique du pancréas**³, le **sida chez l'enfant**⁷ et certaines autres conditions regroupées sous le terme de **sialadénose**^{2,4}. Il est à noter que contrairement aux autres pathologies salivaires discutées jusqu'ici, ces diverses conditions s'observent généralement bilatéralement et, exception faite de la fibrose kystique du pancréas, s'accompagnent le plus souvent d'une atteinte synchrone des deux parotides. Elles seront couvertes de façon

plus appropriée dans le diagnostic différentiel des masses parotidiennes. Signifions enfin que la **ranule plongeante** constitue une autre cause de masse d'origine salivaire. Cette lésion représente la contrepartie cervicale de la ranule intra-orale. Elle prend la forme d'un gonflement asymptomatique et molasse de la région sous-maxillaire, et résulte de l'hernie d'un kyste d'extravasation sub-lingual à travers le mylohyoïdien^{8,9}.

Des **adénopathies isolées** peuvent aussi se rencontrer dans la région sous-maxillaire, et, en principe, toute adénopathie de ce type doit être considérée comme néoplasique jusqu'à preuve du contraire, particulièrement si elle est chronique, évolutive et de diamètre supérieur à 1.5 cm. Ces points ont été déjà soulignés lors d'une publication antérieure. L'**abcès sous-mandibulaire idiopathique** constitue une autre cause de masse cervicale isolée. Cette condition fait référence à la présence d'abcès idiopathiques de la région sous-maxillaire généralement observés chez le jeune enfant¹⁰. L'étiologie de ces abcès demeure incertaine, mais l'on croit généralement qu'ils proviennent de fines blessures muco-cutanées si communes chez l'enfant. Dans la majorité des cas, le micro-organisme responsable est le staphylocoque doré; la symptomatologie évoquée est identique à celle qui est observée dans les cas de cellulites dentaires. Il faudrait enfin préciser que certains **kystes et tumeurs mandibulaires** peuvent parfois déborder dans la fosse sous-maxillaire et en imposer superficiellement pour des pathologies des tissus mous; il revient à l'examen radiographique d'en démontrer leur présence.

Masses de la région rétro-mandibulaire

D'une façon générale, les masses de la région rétro-mandibulaire et massétérienne sont principalement l'apanage des pathologies parotidiennes, et à ce titre, regroupent bon nombre des conditions qui ont été mentionnées dans le diagnostic différentiel des lésions des glandes sous-maxillaires.

La **tumeur parotidienne** doit être le premier diagnostic considéré en face d'une masse ferme, chronique et d'évolution progressive notée dans cette région. Les formes bénignes sont principalement représentées par l'adénome pléomorphe (tumeur mixte) et le cystadénome papillaire (tumeur de Whartin) alors que le carcinome muco-épidermoïde, la tumeur mixte maligne, l'adénocarcinome à cellule acinaire, le carcinome adénoïde kystique



fig. 1

(cylindrome), le carcinome épidermoïde et l'adéno-carcinome indifférencié composent la majorité des tumeurs malignes^{1,2}.

L'atteinte du nerf facial ainsi que la présence de douleur, de croissance rapide, d'induration et de fixation aux structures sous-jacentes sont hautement suggestives de malignité^{1,2}. Le mélanome et le carcinome épidermoïde sont les principales tumeurs métastatiques à la parotide, suivis dans l'ordre des adénocarcinomes d'origine pulmonaire, mammaire, rénale et digestive^{2,11}. Soulignons enfin que l'hémangiome constitue la tumeur parotidienne la plus fréquente chez l'enfant².

Les gonflements associés à la présence d'une **obstruction canalaire** sont typiques et miment en tout point les symptômes évoqués par les sialolithiases sous-maxillaires. Les calculs salivaires sont cependant beaucoup plus rarement démontrés au niveau de la glande parotide, en raison même du type de salive excrétée; les strictures du canal et les bouchons muqueux (mucous plugs) sont les principaux facteurs responsables. Tel qu'il a été déjà souligné, des phénomènes de sialadénite chronique compliquent invariablement les cas non traités.

Les oreillons ou l'infection par le paramyxovirus constituent le prototype de la **sialadénite aiguë virale**. Chez le sujet non immunisé, cette infection prend la forme d'un gonflement douloureux des glandes salivaires particulièrement démontrable au niveau des deux parotides mais à un moindre degré aussi au niveau des sous-maxillaires^{4,6,12}. Le pic d'incidence de la parotidite ourlienne se situe entre cinq et neuf ans et la plupart des enfants affectés présentent une atteinte modérée de leur état général. Certaines présentations atypiques peuvent être parfois rencontrées, notamment l'atteinte unilatérale des parotides et l'atteinte

isolée des sous-maxillaires⁶. Chez l'adulte, les oreillons se compliquent dans 20 à 35 pour cent des cas d'une orchépididymite qui comporte un certain risque de stérilité^{6,12}. Certaines autres formes de parotidite virale sont occasionnellement observées; elles sont généralement secondaires à une infection par le cytomégalo virus ou certaines souches d'écho-coxsackies^{2,4}.

La **sialadénite aiguë bactérienne** forme une catégorie particulière de sialadénite microbienne. Cette condition résulte d'une infection rétrograde d'une glande salivaire majeure par le staphylocoque doré ou certains streptocoques et s'observe presque exclusivement en milieu hospitalier, chez des patients âgés déshydratés, soumis à une chirurgie ou rendus xérostomiques par la prise de médicaments anticholinergiques^{2,4,12,13}. La parotide est de loin la glande la plus souvent affectée et l'atteinte est généralement unilatérale. La glande devient typiquement douloureuse, chaude et enflée, et la palpation locale permet l'expulsion de pus par le canal de Sténon. L'infection est sérieuse car la plupart des patients sont médicalement compromis^{2,4,12}. La fréquence de la parotidite aiguë bactérienne a cependant considérablement diminué ces dernières années.

Certaines sialadénites bactériennes s'observent parfois chez l'enfant et se caractérisent par une tendance élevée à la récurrence d'où leur nom de **sialadénites bactériennes récurrentes** de l'enfance^{2,4}. Leur étiologie est obscure mais comporte probablement certains facteurs hormonaux car la majorité de ces sialadénites disparaissent à la puberté^{2,4}. D'autres sialadénites bactériennes récurrentes se rencontrent aussi chez l'adulte et sont généralement secondaires à la présence d'une obstruction canalaire^{2,4}. Ces sialadénites se présentent sous forme de gonflements douloureux répétés des parotides ou des sous-maxillaires et s'accompagnent souvent d'une expulsion de salive purulente. Le traitement repose sur l'antibiothérapie mais nécessite parfois l'ablation de la glande affectée.

Certaines sialadénites surviennent par ailleurs sous la base d'une atteinte auto-immune. Il s'agit notamment du **syndrome de Sjögren**, du "**Sicca syndrome**" et de la **lésion lympho-épithéliale bénigne** aussi dénommée maladie de Mikulicz^{1,2,4,5,6}. Ces conditions semblent étroitement reliées cliniquement et ne se distinguent que par la gravité de leurs symptômes et certaines particularités de nature immunitaire^{2,5,14}. Elles se caractérisent par la présence d'un infiltrat lymphoplasmocytaire chronique et s'observent

d'avantage chez les femmes de la cinquième et de la sixième décade. La lésion lympho-épithéliale bénigne semble constituer une variante du syndrome de Sjögren et se définit par la présence de gonflement bilatéral des parotides et/ou des sous-maxillaires, avec xérostomie et atteinte facultative des glandes lacrymales^{1,2,4}. Le syndrome de Sjögren existe quant à lui sous deux formes^{2,4,5,15}. Dans sa forme secondaire, il comprend classiquement l'association d'une xérostomie, d'une xérophtalmie (kérato-conjonctivite sèche) et d'une arthrite rhumatoïde, quoique diverses autres collagénoses et maladies auto-immunes peuvent être aussi rencontrées. Le "Sicca syndrome" ou Sjögren primaire réfère à la présence de xérostomie et de xérophtalmie, sans collagénose associée. Une hypertrophie des glandes salivaires s'observe souvent dans le Sicca syndrome, ce qui n'est pas sans rappeler la lésion lympho-épithéliale bénigne. Divers désordres lympho-prolifératifs malins tels les gammopathies monoclonales, la macroglobulinémie de Waldenström et les lymphomes salivaires, nodaux et extra-nodaux viennent parfois compliquer la lésion lympho-épithéliale bénigne, le syndrome de Sjögren et particulièrement le Sicca syndrome^{2,15,16,17,18}. Le risque pour un patient souffrant d'un syndrome de Sjögren de développer un lymphome est d'environ quarante quatre fois plus élevé que dans la population générale^{14,19}. Des polyadénopathies généralisées désignées de pseudo-lymphome peuvent aussi s'observer^{2,15}.

Certaines conditions de nature tumorale et infectieuse peuvent être responsables d'une infiltration diffuse des glandes salivaires. Elles comprennent la **sarcoïdose** (fièvre uvéo-parotidienne), la **tuberculose**, les **infections par mycobactéries atypiques**, les **lymphomes** et la **leucémie**^{2,4}. Ces diverses conditions étaient anciennement regroupées sous le terme de syndrome de Milkulicz.

Les **sialadénoses** forment une autre catégorie importante de pathologies salivaires. Elles se caractérisent par la présence de gonflement bilatéral et asymptomatique des parotides ou des sous-maxillaires et se distinguent des autres conditions jusqu'ici discutées par leur absence de composante inflammatoire, tumorale ou infectieuse. (cf. **fig. 2**) Elles s'observent dans différentes affections métaboliques et hormonales parmi lesquelles il faut citer, selon Lynch et Batsakis, l'insuffisance rénale chronique, l'éthylisme chronique, la cirrhose hépatique, les malnutritions, le diabète, l'hypertension, l'obésité, l'hyperlipidé-

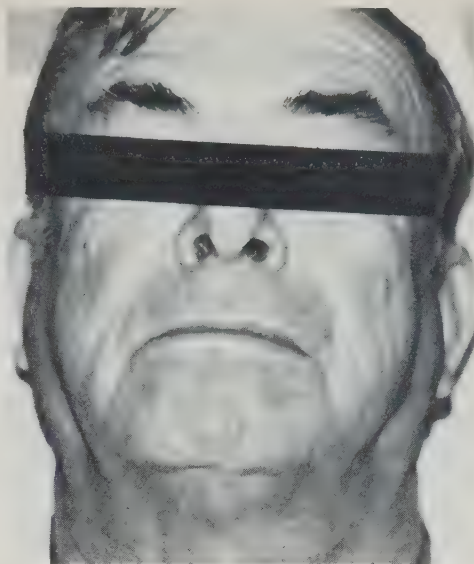


fig. 2

mie, la grossesse, la ménopause, l'hypogonadisme et la prise de certains médicaments comme la phénylbutazone^{2,4}. L'étiologie de ces sialadénoses demeure incertaine mais pourrait être attribuable à une surcharge hydrosodée chronique ou à une dysfonction d'origine hormonale. Les changements histologiques observés comprennent la présence d'une hypertrophie acinaire et d'un oedème interstitiel qui évoluent subséquentement vers un remplacement adipeux du parenchyme glandulaire². Une dernière cause de masses salivaires mérite enfin d'être ici mentionnée, soit les hypertrophies parotidiennes bilatérales notées dans les cas de **Sida pédiatrique**⁷.

Le diagnostic différentiel des masses de la région rétro-mandibulaire ou massétérienne ne se limite pas qu'aux pathologies salivaires; il comprend diverses autres conditions originant des structures anatomiques avoisinantes, notamment de la mandibule, du masséter, des ganglions cervicaux superficiels, de la carotide et des différents troncs nerveux originant de la base du crâne. Les **tumeurs massétériennes** sont rares mais peuvent être occasionnellement observées. L'**hypertrophie massétérienne uni ou bilatérale** est cependant beaucoup plus fréquente; son diagnostic repose sur un examen minutieux de l'appareil masticateur, car elle est généralement secondaire à des troubles d'occlusion. Les **infections de l'espace sub-massétérien, parotidien ou pharyngé latéral** sont par ailleurs assez facilement évoquées en présence de fièvre, de douleur, de trismus et d'atteinte de l'état général¹. Les **kystes et tumeurs mandibulaires** peuvent être par ailleurs responsables d'une déformation locale parfois importante. C'est le cas notamment du kyste dentigère, du kérato-kyste, du kyste anévrysmal, de l'améloblastome



fig. 3

et des lésions métastatiques. Diverses **pathologies ganglionnaires** peuvent aussi s'observer, tel qu'antérieurement souligné. Enfin, certaines **tumeurs neurogènes, vasculaires et mésenchymateuses** originant de l'espace pharyngé latéral complètent le diagnostic différentiel des masses rétro-mandibulaires. Parmi celles-ci, il faut mentionner le schwannome, le neurofibrome, les paragangliomes, les tumeurs du lobe profond de la parotide, l'anévrysme de la carotide interne ou externe, l'hémangiome, le lymphangiome et le kyste lympho-épithélial^{2,20,21,22}.

Masses de la ligne médiane

Malgré la diversité des processus rencontrés dans cette région, il est intéressant de noter que le diagnostic différentiel des masses de la ligne médiane est dominé dans une certaine mesure par les pathologies de la glande thyroïde.

À ce titre, le **goître** représente la lésion la plus souvent observée et doit être le premier diagnostic considéré en face d'une masse de la partie inférieure de la ligne médiane. (cf. **fig. 3**). La glande présente une augmentation diffuse de volume qui la distingue en général des différentes variétés de tumeurs thyroïdiennes; sa texture de surface est variable, lisse (goître simple) ou nodulaire (goître multinodulaire), selon la pathologie sous-jacente.⁶ Les caractères morphologiques du goître sont de mauvais reflets de l'état fonctionnel de la glande et il revient aux tests de laboratoire d'apprécier ce dernier paramètre. Les **tumeurs malignes** forment une autre catégorie de masses thyroïdiennes. Elles se présentent typiquement sous la forme d'un nodule isolé asymptomatique, souvent induré et fixé aux structures sous-jacentes^{6,23}. En principe, toute masse thyroïdienne d'appari-

tion récente, répondant à ces critères, doit être considérée comme tumorale jusqu'à preuve du contraire et investiguée dans les plus brefs délais.

La **thyroïdite sub-aiguë** représente une autre cause de masse observée dans la région inférieure et médiane du cou. Elle résulte d'une inflammation sub-aiguë de la glande thyroïde, vraisemblablement d'origine virale, et se caractérise par la présence d'une importante douleur à la palpation qui en traduit la nature inflammatoire^{6,23}. Le **kyste thyroglosse** constitue l'anomalie de développement de la thyroïde la plus souvent observée²⁴. Il se présente comme une lésion rénitente et asymptomatique, classiquement retrouvée sur la ligne médiane, mais parfois latéralisée^{24,25}. Il origine du canal thyroglosse et par conséquent peut se situer à n'importe quel niveau le long de ce canal; sa principale localisation demeure toutefois la région infra-hyoïdienne^{24,25}. Ce type de kyste se rencontre à tout âge mais affecte surtout les jeunes de la dixième décennie^{2,24}. Quelques cas de transformation maligne ont été signalés dans la littérature, à partir d'îlots de tissu thyroïdien retrouvés dans la paroi de ces kystes²⁶. Certaines autres anomalies de développement de la thyroïde méritent d'être aussi soulignées. Il s'agit du **lobe pyramidal hypertrophique**, du **kyste du lobe pyramidal** et de la **thyroïde ectopique**^{24,25}. Les deux premières entités complètent le diagnostic différentiel des nodules thyroïdiens solitaires et ne peuvent être soupçonnés que par leur position anatomique et leur proximité de l'isthme thyroïdien. La thyroïde ectopique s'observe rarement mais doit être considérée de routine dans le diagnostic différentiel des masses de la ligne médiane, particulièrement en regard d'une possible exérèse. 90 pour cent des cas de thyroïde ectopique se retrouvent au niveau de la base de la langue (thyroïde linguale), le reste dans la région hyoïdienne²⁴.

Certaines autres pathologies complètent le diagnostic différentiel des masses de la ligne médiane. Il s'agit principalement du kyste dermoïde, de l'angine de Ludwig et des lésions provenant des ganglions sous-mentonniers. Le **kyste dermoïde** est une cause inhabituelle de masse cervicale. Il affecte principalement les jeunes adultes de la deuxième et troisième décennie et se retrouve classiquement sur la ligne médiane, dans la région sous-mentonnaire². (cf. **fig. 4**). Il s'observe aussi dans le plancher de la bouche, en position médiane ou latéralisé exceptionnellement dans la fosse sous-maxillaire^{1,2,27,28}. Il se présente comme une masse d'évolution lente et asymptomatique, qui

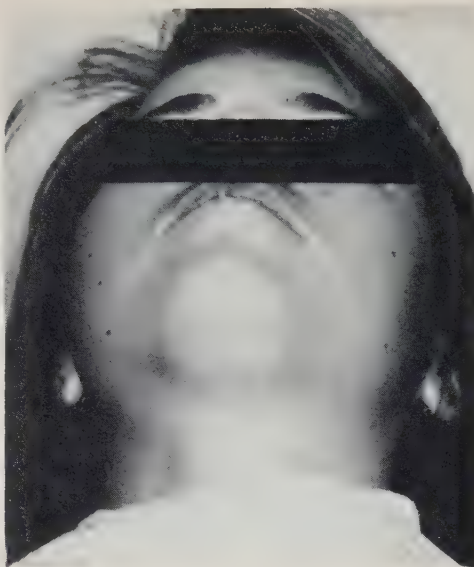


fig. 4

n'est pas sans rappeler le kyste sébacé à la palpation^{1,2,25}. On en reconnaît trois types, le kyste épidermoïde, le kyste dermoïde et le kyste térétoïde (tératome kystique)². Cette dernière variété est extrêmement rare au niveau de la tête et du cou, ne contribuant que pour 1 à 3.5 pour cent de tous les tératomes rapportés²⁹. Ces tératomes cervicaux se rencontrent par ailleurs presque exclusivement chez le nouveau-né et l'enfant^{2,29}. L'**angine de Ludwig** représente une forme particulièrement importante de cellulite intéressant le plancher de la bouche. L'atteinte est en général très sévère et dicte l'hospitalisation immédiate du patient. Différentes **pathologies ganglionnaires** peuvent aussi s'observer; elles ont fait l'objet d'une discussion antérieure. Certaines lésions mésenchymateuses comme le lipome ou le kyste sébacé peuvent enfin être occasionnellement rencontrées; leur présence dans cette région doit être cependant considérée comme accidentelle, car ces conditions ne démontrent intrinsèquement aucun trophisme particulier pour la ligne médiane.

Masses de la région latérale du cou

Le diagnostic différentiel des masses de la région latérale du cou est relativement large. Il comprend une série de conditions de nature tumorale et kystique, congénitales ou acquises, et tel qu'il sera souligné plus loin, varie considérablement selon l'âge du patient.

Chez l'adulte, plusieurs études ont clairement démontré que la majorité des masses isolées de la région latérale du cou sont d'origine ganglionnaire et que la plupart d'entre elles sont de nature néoplasique³⁰. En principe donc, la décou-

verte d'une masse isolée de la région latérale du cou, ferme et asymptomatique, chez un adulte d'âge moyen ou avancé, doit être considérée comme **métastatique** jusqu'à preuve du contraire^{30,31}. Dans ces circonstances, la tumeur primaire est en général un carcinome épidermoïde localisé dans un territoire de la sphère O.R.L. L'apparition de métastases ganglionnaires alourdit grandement le pronostic de ces carcinomes. Dans les cas avancés, l'examen révèle la présence d'adénopathies fixes et indurées³². Les **lymphomes** représentent une cause relativement fréquente de masse ganglionnaire isolée, tant chez l'adulte que chez l'enfant. Ces lymphomes évoluent initialement de façon indolente, sans atteinte importante de l'état général. Leur consistance est ferme et ils doivent être principalement distingués des adénopathies métastatiques isolées et des différents sarcomes de la tête et du cou³⁰. Les **sarcomes**, quant à eux, s'observent beaucoup plus rarement et sont principalement représentés chez l'adulte par le schwannome malin, le fibrosarcome, le liposarcome et les fibromatoses agressives³³. Le rhabdomyosarcome constitue le type de sarcome le plus fréquemment rencontré chez l'enfant^{2,30}. Leur pronostic varie selon l'agressivité de la tumeur et la précocité du diagnostic.

Par ailleurs, l'une des masses cervicales isolées les plus typiques est sans contredit le **kyste lympho-épithélial ou branchial**. Ce kyste se présente comme une masse d'évolution lente, rénitente et asymptomatique, classiquement retrouvée dans la région de l'angle mandibulaire, le long du bord antérieur du sterno-cléido-mastoidien^{1,2,25}. Il affecte principalement les jeunes adultes et ne présente généralement pas de problème quant à son diagnostic. Trois autres conditions, beaucoup plus rares, complètent le diagnostic différentiel des masses de la région latérale du cou. Il s'agit de la tumeur du corps carotidien, de l'hygrome kystique et du laryngocèle. La **tumeur du corps carotidien, ou paragangliome du corps carotidien**, représente une forme rare de tumeur vasculaire originant du corps carotidien, une structure spécialisée retrouvée à la jonction des deux carotides². Elle se présente sous la forme d'une masse pulsatile localisée dans la partie supérieure du cou, dans la même région que le kyste lympho-épithélial^{2,20,34}. La présence de souffle, de pulsations locales, ainsi que l'expulsion possible du contenu de la masse par pression constituent de précieux indices diagnostiques^{2,20}. Chez la personne âgée toutefois, l'**anévrisme de la carotide** doit être considéré comme

la cause la plus fréquente de masse isolée pulsatile.

L'hygrome kystique représente une forme particulière de lymphangiome classiquement observée chez l'enfant. La plupart des cas apparaissent avant l'âge de deux ans et bon nombre d'entre eux sont présents dès la naissance^{2,25,35}. Certains hygromes sont cependant occasionnellement rencontrés chez l'adulte³⁶. La lésion prend typiquement la forme d'une masse étendue, mal délimitée, molasse et asymptomatique, principalement retrouvée dans la région supra-claviculaire et sous-maxillaire^{25,35}. Le diagnostic différentiel est celui des masses néo-natales, soit le kyste branchial, le tératome, le kyste thyroïdienne et le goître congénital^{29,35}. Le laryngocèle constitue une autre forme rare de masse cervicale. Il représente une extension du ventricule laryngé et se manifeste comme un gonflement molasse et asymptomatique généralement noté dans la partie supérieure du cou^{2,25,37}. Il s'observe principalement chez les patients qui génèrent de fortes pressions intra-glottiques (ex: musiciens) et correspond cliniquement à une masse remplie d'air dont le volume peut être altéré par pression locale ou par manœuvre de Valsalva^{25,37}. Les données de l'examen clinique sont caractéristiques et le diagnostic se prouve par radiographie des tissus mous du cou.

Ceci complète le diagnostic différentiel des masses cervicales. Reconnaisant que dans l'ensemble, la discussion soit demeurée à un niveau superficiel en raison de l'éventail étendu des pathologies impliquées, il n'en demeure pas moins que cette publication fournit au dentiste un relevé détaillé des principales masses qu'il est susceptible de rencontrer à l'examen de la tête et du cou. Ceci lui permettra, espérons-le, de prendre une part active dans le diagnostic et l'investigation des patients qui le consulteront pour une masse cervicale. Δ

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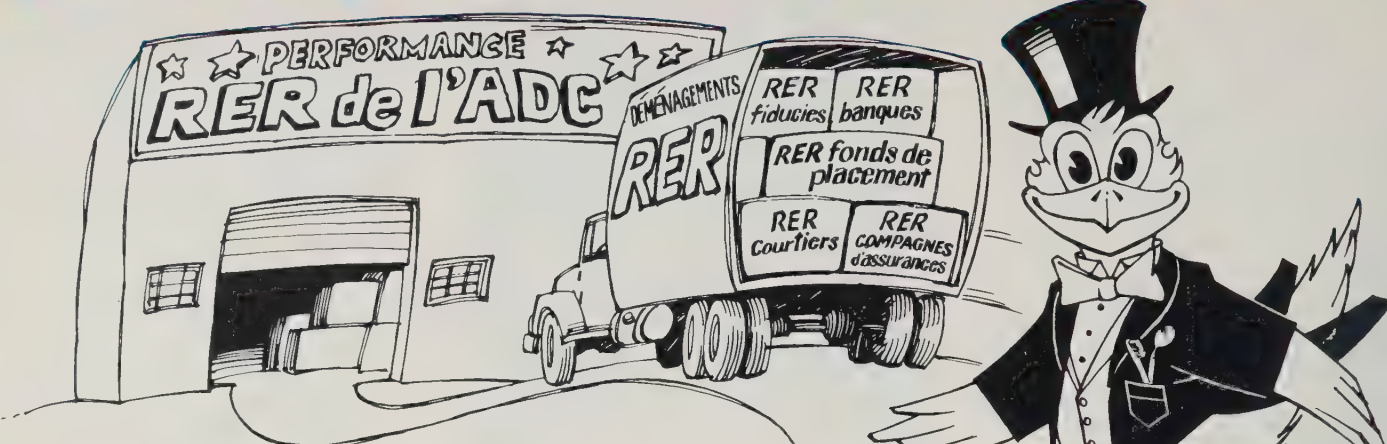
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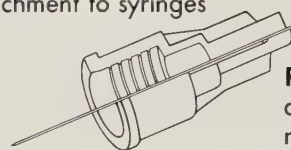
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Announcements

November/Novembre 1989

November 1-3: 52nd Annual Meeting of the American Association of Public Health Dentistry in Honolulu, Hawaii. Contact: AAPHD, National Office, 10619 Jousting Lane, Richmond, VA 23235, USA.

November 1-3: 4th International Dental Congress in Cairo Meridien Hotel, Egypt. Contact: Dr. Mohamed El-Sadeek, President, 4th International Dental Congress, Faculty of Oral and Dental Medicine, El Kasr El-Ainy, Cairo, Egypt.

November 2-3: 3rd Annual Bernard Jankelson Memorial Lecture sponsored by the International College of Cranio-Mandibular Orthopedics. Detailed information available from ICCMO International Headquarters, 830 Marsh & McLennan Bldg, Seattle, WA 98101, USA.

November 3: American Association of Dental Consultants in Honolulu, Hawaii. Contact: Dr. Alan Helerstein, 919 Deer Park Ave, North Babylon, NY 11703, USA.

November 3: American Endodontic Society in Honolulu, Hawaii. Contact: Dr. Alvin H. Arzin, 2 Learning Lane, Levittown, PA 19054, USA.

November 3-4: Management of the Medically Compromised and Handicapped Patient in Dental Practice in Winnipeg. For information, contact: Div of Continuing Education, Faculty of Dentistry, 780 Bannatyne Ave, Winnipeg, Man R3E 0W3. Tel: (204) 788-6331.

November 4-9: American Dental Association Convention in Hawaii. For convention pre-registration and first class group travel arrangements for 10 days, please contact: Dr. Bob Brandon, 85 Lonsdale Dr, London, Ont N6G 1T4. Tel: (519) 657-3368.

November 5-8: American Academy of Dental Radiology Contact: Capt. Tom McDavid, OASD Health Affairs, Pentagon Room 3D372, Washington, DC 20301-1200, USA.

November 8-12: American Society of Dentistry for Children in San Diego, CA. Contact: Ms. Carol A. Teuscher, 211 E Chicago Ave, Suite 1430, Chicago, Ill 60611, USA.

November 15-18: VI Congreso Internacional de Estomatología y X Congreso Nacional de Odontología in Lima, Peru. Contact: Dr. Ramon Castillo, Presidente de los Congresos, Alfredo Salazar 583, Of. 102, San Isidro, Lima, Peru.

November 17-20: XX Congreso Asociacion Dental Mexicana Contact: Dr. Yolanda Villarreal de Justus, Ave Ejercito Nal #530 - 5 piso, Polanco, Mexico.

November 21-24: Congrès national de l'Association dentaire française in Paris. Contact: Dr. A. Deyrolle, Palais des Congrès, 92, av de Wagram, 75017 Paris, France. Tel: 42 27 89 00.

November 22-24: Swedish Dental Society Contact: Ms. Charlotte Nackstad, Stockholm International Fairs, Box 5843, 102 48 Stockholm, Sweden. Tel: 0046-8-663 12 50.

November 28-December 2: Osseointegration in Clinical Dentistry: Technician and Clinical Training Courses in Malmo, Sweden. For details, contact: Postgraduate Centre of Dentistry, Cal Gustafs vag 34, S21421 Malmo, Sweden.

November 30: Toronto Academy of Dentistry - 52nd Annual Winter Clinic at the Metro Toronto Convention Centre. For information, contact the Academy of Dentistry at (416) 967-5649.

December/Décembre 1989

December 8-10: 13th Annual Session and Scientific Meeting of the Association for Dental Sciences of the Republic of China in Tainan, Taiwan. Contact: Dr. Chin-Kuang Wen, 7F, No. 120, Sec. 2, Chung Hsiao E Rd, Taipei, Taiwan. Tel: 3965390-1.

December 14-16: The Dental Association of Thailand Contact Col Amnari Dhammajinda, Secretary General, The Dental Association of Thailand, 12 Soi Prasanmitr, Sukhumvit 23, Bangkok 10110, Thailand. Tel: 258-9251.

December 27-30: 44th Indian Dental Conference in Calcutta. For details write: Dr. K.L. Banerjee, Conference Secretariat, Dr. R. Ahmed Dental College & Hospital, 114, Acharya, J.C. Bose Rd, Calcutta - 700 014 India.

January/Janvier 1990

January 14-20: Midwinter Dental Meeting of the Barbados Dental Association in Bridgetown. Contact: Mrs. Alison Hoad, Gardiner Austin Travel, Ridge House, Cavan Lanes, Bridgetown, Barbados.

January 17-21: Yankee Dental Congress Gateway to the Future in Boston, Mass. Contact: Massachusetts Dental Society, 83 Speen St, Natick, MA 01760-4125, USA, or tel: (508) 651-7511.

January 20-25: XIV Congresso Paulista de Odontologia, XXVIII Seminario Odontologico Latino-Americano, II Congresso Universitario Paulista de Odontologia in Brazil. Contact: Dr. Joao Vieira de Moraes, President, Associacao Paulista dos Cirurgioes Dentistas, Rue Humaita, 389 - Bela Vista C.P. 2523, CEP 01321 Sao Paulo, Brazil. Tel: 37-4194.

January 20-27: 24th International Alpine Dental Conference in Courchevel, France. Contact: LW Bryer, 24 Cadogan Square, London, SW1X 0JP, England.

January 20-27: XXIII Congreso de FOCAP in Atlapa, Panama. Contact: Dr. Ricardo Arango, president, XXIII Congreso internacional de FOCAP, PO Box 6777, Panama 5, Panama.

January 24-27: First World Endodontic Congress in Mexico City. Contact: Dr Jose Oynick, Prado Sur 480, Lomas Virreyes, Mexico 11000 DF, Mexico.

January 26-28: I International Dominican Congress of Pediatric Dentistry, II Congress of the Ibero-American Association of Pediatric Dentistry, V Dominican Congress of Pediatric Dentistry in Santo Domingo, Dominican Republic. Contact: Centre of Pediatric Dentistry, PO Box 2753, Santo Domingo, Dominican Republic or tel: (809) 689-4277.

February/Février 1990

February 1-3: Miami Winter Meeting For more information, contact: East Coast District Dental Society, 420 S Dixie Hwy, 2-E, Coral Gables, FL 33146, USA. (305) 667-3647.

February 11-14: 125th Midwinter Meeting of the Chicago Dental Society. Contact: Chicago Dental Society, 401 N Michigan Ave, Chicago, IL 60611, USA.

February 18-22: Annual Scientific Convention of the Dental Association of Trinidad and Tobago. Contact: The Honourary Secretary, 115 Abercromby St, Port-of-Spain, Trinidad and Tobago.

February 24-March 3: Virgin Islands Dental Association Convention in St. Thomas. For convention pre-registration, travel and accommodation at group rates, please contact: Dr. Bob Brandon at (519) 657-3368.

March/Mars 1990

March 7-11: International Association for Dental Research in Cincinnati, Ohio. Contact: Ms. Judith A. Gauchel, Scientific Program/Meeting Mgr, 1111-14th St NW, Suite 1000, Washington, DC 20005 USA. Tel: (202) 898-1050.

March 8-9: The 9th Jordanian Dental Congress in Amman. Contact: Dr. Irfan Sultan, Chairman, Scientific Committee, PO Box 1326, Amman, Jordan.

March 14-16: The 4th World Dental Congress of the Egyptian Clinical Dental Society in Cairo. Contact: Prof. Avd Elahdi Nasif Selim, College of Dentistry, Cairo University, Cairo, Egypt.

March 24-31: 25th International Alpine Dental Conference in Courchevel, France. Contact: LW Bryer, 24 Cadogan Square, London, SW1X 0JP, England.

March 26-30: Hawaiian Symposium on Endodontics & Periodontics sponsored by the Alberta Academy of General Dentistry and the Edmonton Multidisciplinary Dental Study Club. Contact: Dr. Eugene Dalla Lana, 206-1305-11 Avenue SW, Calgary, AB T3C 3P6 or tel: (403) 244-4867.

March 28-30: Big Apple New York Dental Meeting. Contact Dr. Leslie Zucker, 3201 Grand Concourse, Bronx NY 10468, USA.

March 28-31: Annual Dental Meeting of the Finnish Dental Society in Finland. Contact: Taru Ohtola, Training Mgr, Committee for Continuing Education, Akavatalo, Rautatienlaitenkatu 6 SF-00520 Helsinki, Finland.

March 31-April 6: Annual Meeting of the Canadian Association of Oral and Maxillofacial Surgeons in Whistler, BC. ORAL IMPLANTS - Trouble shooting for successful attached prosthesis. Contact: Dr. Mike Kaburda, 208-600 Royal Ave, New Westminster, BC V3M 1J3.

April/Avril 1990

April 1-6: VIth World Congress on Pain in Adelaide, Australia. For information: International Association for the Study of Pain, 909 NE 43rd St, Suite 306, Seattle, WA 98105-6020 USA. (206) 547-6409.

April 25-29: American Association of Endodontists. For more information, contact: Ms. Irma S. Kudo, 211 E Chicago Ave, Suite 1501, Chicago, IL 60611, USA.

May/Mai 1990

May 3-5: ODA Annual Spring Meeting to be held at the Metro Toronto Convention Centre is looking for clinicians. All members of the dental team are invited to participate and share their expertise. For an application form, please contact: Diana Thorneycroft, ODA, 234 St. George St, Toronto, ONT M5R 2P1.

May 16-19: International Dental Congress of the British Dental Association at Barbican Centre in London. Contact: British Dental Association, 64 Wimpole St, London W1M 8A1, England or tel 01 935 0875.

May 17-19: Congrès de la Société Suisse d'Odontostomatologie SSO in Montreux, Switzerland. Contact: D' Pierre Spahn, 51 av du Casino, CH-1820 Montreux, Switzerland.

May 20-24: Les Journées dentaires du Québec in Montréal. Contact: Chantal Bally, 625 boul René-Lévesque ouest, Montréal, Qué H3J 1Y2.

May 28-31: The Impact of Lasers on Dental Science in Paris, France. Contact: Lasers 1990 Scientific Secretariat, Faculté de Chirurgie dentaire, 1 rue M. Arnoux, F-92120 Montrouge, France.

June/Juin 1990

June 2-4: XI^{èmes} Journées françaises de Parodontologie in Cannes, France. Contact: Dr. Catherine Mattout, 21 rue Sylvabelle, 13006 Marseille, France.

June 19-22: 96th Annual Meeting of the American Dental Society of Europe in St. Andrews, Scotland. Contact: Dr. Clive Debenham, American Dental Society of Europe, 1 Harley St, London W1N 1DA, England.

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Core-Vent Corporation	771
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Hoechst, Inc.	830
F.W. Horner, Inc.	780, 781, 830
Johnson & Johnson, Inc.	788
Interplak	798
Listerine	758, 759, 760
Municipality of Barrington	819
Nobelpharma, Inc.	782
Northwestern Health Unit	805
Ontario Ministry of Health	814
Oral B	806
Plax	796, 797
Premier Dental (Canada) Inc.	774
Procter and Gamble, Inc.	756
Progressive Solutions	784
Teledyne WaterPik Canada Ltd.	772, 773
Viaguard Pharmaceuticals Ltd.	792
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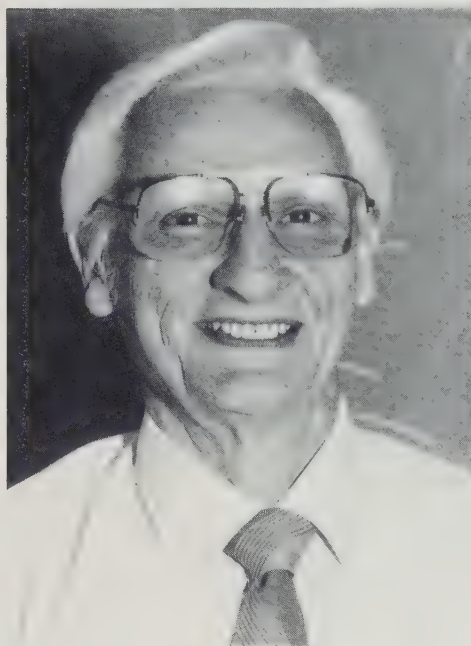
The other side of confection use and dental caries

*I. Kleinberg, Department of Oral Biology and Pathology,
School of Dental Medicine,
State University of New York,
Stony Brook, New York 11794-8702.*

It took many years of research to show that fermentable carbohydrate especially when ingested frequently, was the causative agent in the development of dental caries.¹ This was not easy to accomplish because foods vary widely in their carbohydrate content and differ in their fermentability, duration in the mouth after ingestion, and content of protective substances. Also, dental caries is a complex, multi-factorial disease requiring several factors acting in concert for the bacteria in dental plaque to produce enough acid from foods containing fermentable carbohydrate to cause the disease.^{2,3}

Crucial to the formation of caries lesions is that acid be produced by the microbial flora in dental plaque in sufficient amounts and long enough for the calcium phosphate solubilization conditions to be such that tooth and host factors are unable to prevent loss of tooth mineral.⁴ To a large degree, this is illustrated by the Stephan curve — critical pH relationship shown in **Fig. 1**. Fluoride is able to modify this relationship so that a lower plaque pH is needed to give the same rate of tooth loss as before fluoride (**Fig. 1**). This is because fluoride reduces whereas acid increases the ease of solubilization of tooth mineral.⁵

From this, one can see why the advent and wide use of fluorides both in the water supply and in dentifrices have resulted in the caries rate decreases that have been reported in the many studies done on children, adolescents and young adults.^{6,7,8,9} Although most of this effect has been attributed to fluoride reducing the ease of solubilization of tooth mineral and the facilitating of tooth remineralization with calcium phosphate from the saliva, there is also evidence that fluoride at the high levels provided in dentifrices may also reduce the acid formation capability of the plaque bacteria. This would prevent the Stephan curve reaching as low a pH as in its absence.¹⁰



The confection industry has taken the position with this new situation that their products can now be ingested and enjoyed with less concern than was the case before fluoride. This would not appear to be an unreasonable position except that increased confection use can be expected to increase the caries challenge and undo the benefits of fluoride (**Fig. 1**). This would be particularly so in high risk patients who apparently only receive partial benefit from fluoride. Many such individuals have poor saliva protection.^{11,12} Without saliva, the teeth in most mouths will decay and at a significant rate even with fluoride. Besides the diluting and buffering properties of saliva,¹³ this oral fluid also provides nitrogen containing substrates mainly in the form of urea and arginine for plaque base formation^{14,4} which aids in neutralizing the acids essential for the production of the caries lesion (**Fig. 2**).

Since about 30 per cent of the adult population are hyposalivators with the number about 45 per cent in those over 55,¹⁵ and because root exposure is more prevalent with age and the calcium phosphate mineral

in roots is more easily solubilized by acid than is enamel, a significant number of individuals are still in the moderate to high caries risk¹⁶ category.

To suggest or imply that confection use is no longer a danger is misleading. Methods of identifying the at-risk caries patient are now available but have not been applied in most dental practices. This is because few dentists, dental educators and third party payors have as yet adapted to this new reality. Before fluorides, most of the populations of developed countries developed large numbers of caries lesions and there was little of a preventive nature that could be done. As a result, use of diagnostic technology, even if available to identify caries-active patients would only have been of academic importance. As a result of many years of research, however, this situation has changed. Now the diagnostic technology is better and a smaller percentage of the population, perhaps 30 per cent, are still at moderate to severe risk. Consequently, incorporation of diagnostics technology into dental practice, especially saliva function assessment, has become feasible and increasingly important in the identification of these at-risk patients who need to be appropriately treated so that costly reparative procedures can last for more than a few short years. This identification approach should be of interest to the confection industry, since it could lead to the converse, the identification of those patients that may be able to enjoy confections without the fear of developing caries lesions.

Research on fluorides and dentifrices by several major companies over a period of years to fight dental caries has paid off handsomely for all concerned with the development of effective fluoride products, especially toothpastes. The sugar industry has lagged in developing confections of reduced cariogenicity for moderate and high caries risk patients. This is

a goal that is now within reach with evidence mounting that some foods containing fermentable carbohydrates are less or non-cariogenic because they contain various protective factors.

In essence, the confection industry is not in a position to encourage greater use of its products at this point in time. It needs to facilitate more research into making its products less cariogenic, especially for the at-risk caries patients and to encourage greater use of diagnostics for their identification.

Until it does so or until such occurs, confection use should continue to be discouraged. Substitute sweeteners should still be recommended by the dental practitioner until less cariogenic sugar-containing confections are available. At the same time, the practitioner needs to incorporate diagnostic methods into his or her practice to identify and monitor those patients still at risk, many of whom are those with poor saliva protection.

The author, **Israel Kleinberg**, DDS, PhD, DSc, is Professor and Chairman, Department of Oral Biology and Pathology, School of Dental Medicine, State University of New York, Stony Brook, New York.

Formerly: was Professor of Oral Biology and Head of Biochemistry and Oral Biology, Faculty of Dentistry, University of Manitoba.

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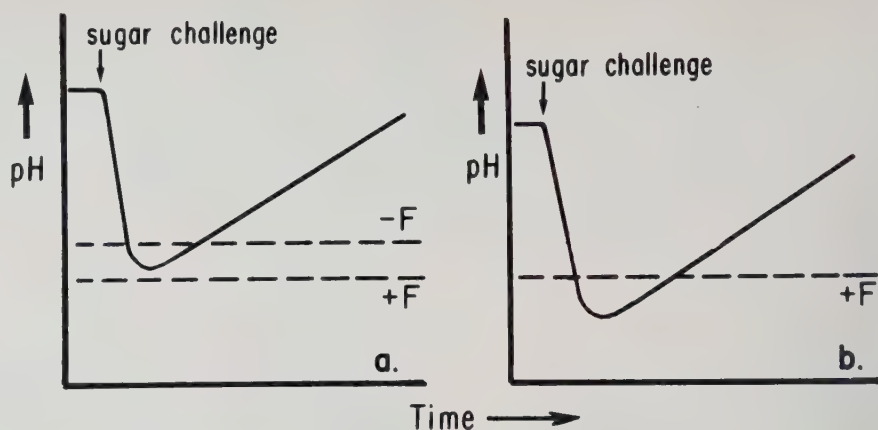


Fig. 1. In (a), fluoride (+F) lowers the "critical pH" so that the Stephan Curve shown is not sufficiently acidogenic to still be cariogenic. Under the same circumstances, a more acidogenic Stephan Curve than the one shown would become less cariogenic but not sufficiently so to be non-cariogenic. Increased confection use could favour the more acidogenic Stephan Curve in (b) and thus counter the benefits of fluoride. For simplicity, the "critical pH" is shown as a line in these figures, whereas in essence, it is believed to be a pH band or zone.

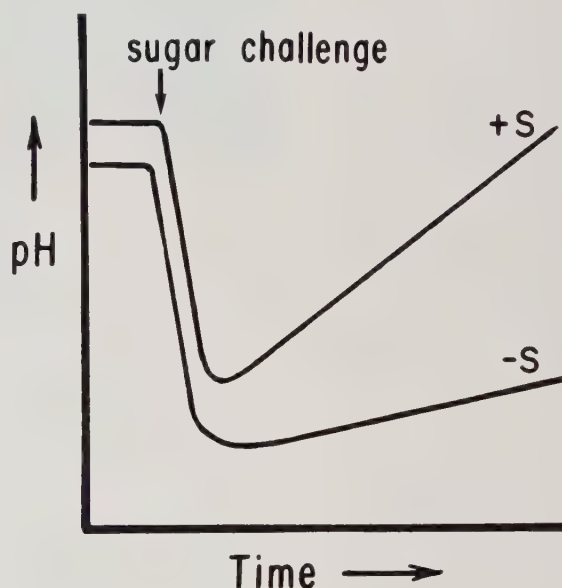


Fig. 2. Effect of saliva on the Stephan Curve. Saliva has a multiplicity of effects on dental plaque. Its deficiency (-S) dramatically increases plaque acidogenicity as shown and its cariogenicity.

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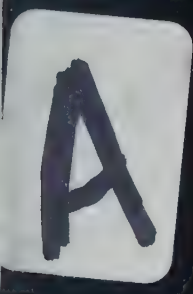
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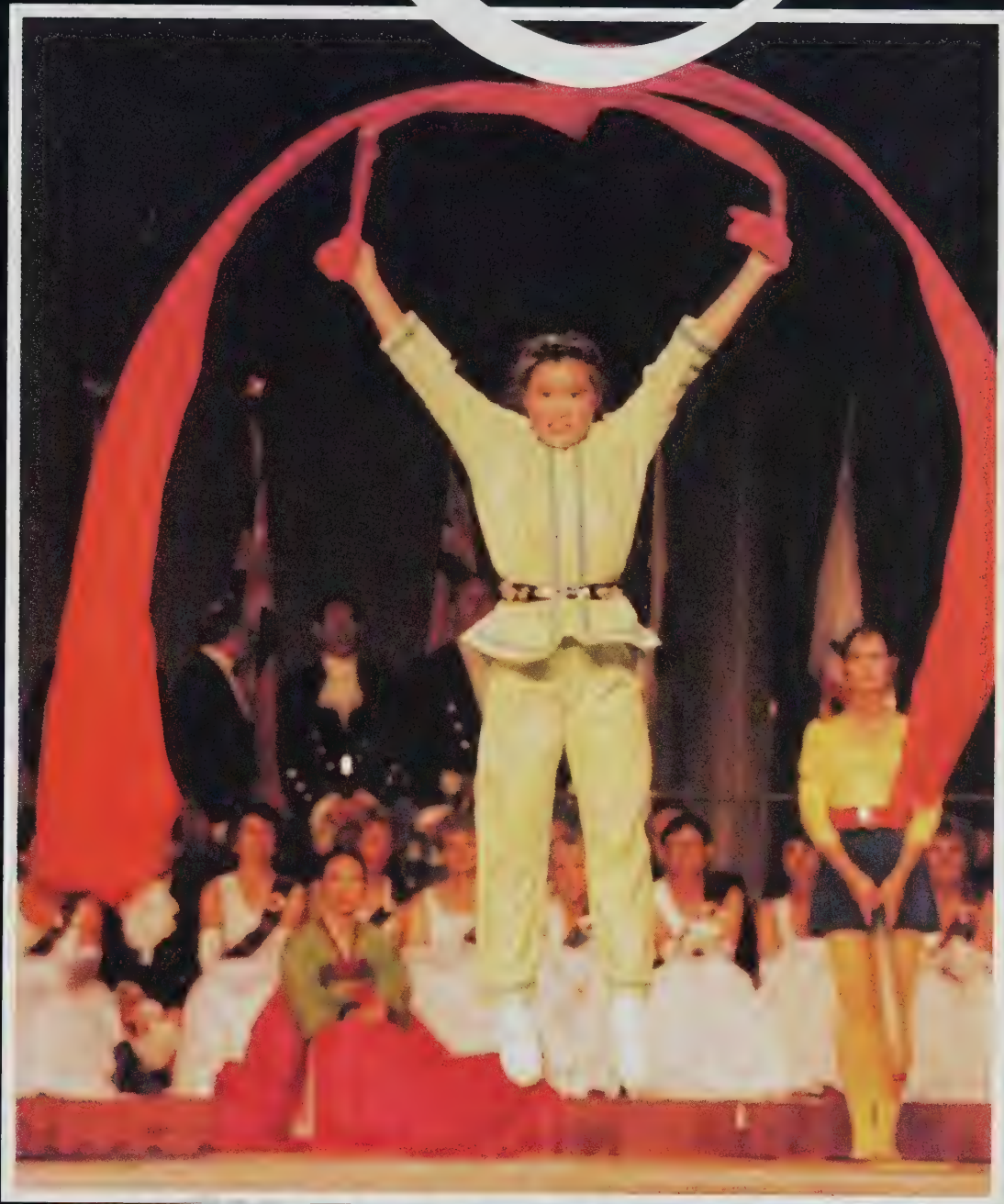
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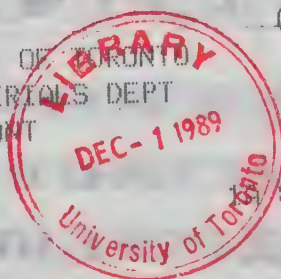


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The Canadian Dental Association serves the dental profession — and through the profession the Canadian public — as the authoritative national voice and resource for dentists.

In cooperation with the provincial dental associations and affiliated organizations, CDA offers services, in both official languages, intended to support and advise all areas of dentistry and to represent, protect, promote and develop the interests of the dentist as ethical practitioner, professional, educator, student, researcher, business person, citizen and individual.

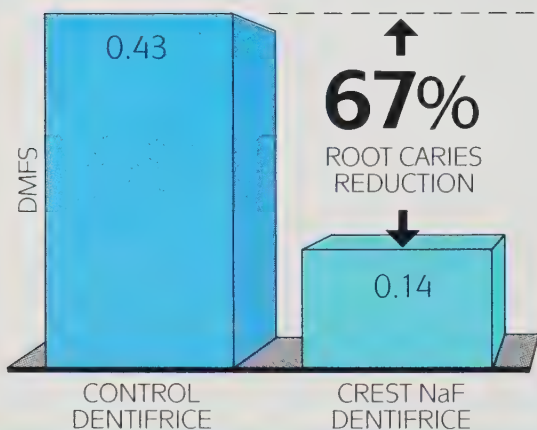
CDA recognizes a particular responsibility to contribute to the development of national positions and standards related to dentistry, dental education, dental research, dental equipment, dental materials and dental personnel.

CDA is dedicated to the principle that all Canadians should have the best oral health care it is possible to provide; it actively seeks input from and dialogue with governments, consumers and all those interested in dentistry to enable it to serve more effectively both its members and the Canadian public.

JOURNAL



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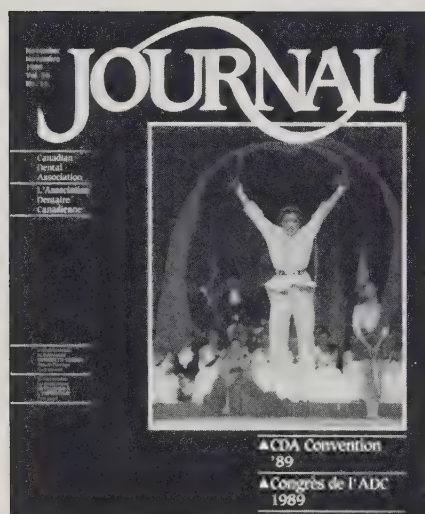
Vol. 55 No. 11

Feature Articles

The new CDA uniform system of Codes and list of services	879	P. Ralph Crawford, BA, DMD
Grieve Memorial Lecture 1989	883	Abstract W. Michael Wainright, BDS, DDS, MSD, FRCD(c)
The story of silver amalgam	887	P. Ralph Crawford, BA, DMD
A review of clinical fixed prosthodontics, from diagnosis to crown cementation	893	Jack N. Lipkin, BSc, DMD Marshall D. Hoffer, DMD

Scientific

Synovial chondromatosis of the TMJ	897	A. W. Gusenbauer, DDS G. C. White, DDS, FRCD(c)
The thyroid gland and the dental practitioner	903	Earle R. Young, BSc, DDS, BScD, MSc, FADSA
Utilization of general anaesthesia by general practitioners in Saskatchewan	909	Lorne D. Koroluk, DMD, MSD, MRCD(c) George A. Riekman, DDS
Rapport de cas: Réaction à anesthésie locale	915	François Blondeau, DDS



A young Vancouver dancer performs a spectacular Chinese dance during the CDA Convention Opening Ceremonies

CDA Convention '89

Departments

847	Editorial "There must be vision"
848	President's Column "The man in the arena"
849	News Update
855	CDA RSP
860	Obituaries
861	Brieflies
863	CDSPI Report
864	The DAP Advisor
865	Letters to the Editor
871	Book Reviews
874	Library/Resource Centre
919	Announcements
921	Marketplace
925	Advertisers' Index
926	It's My Opinion! "A professional partnership program"



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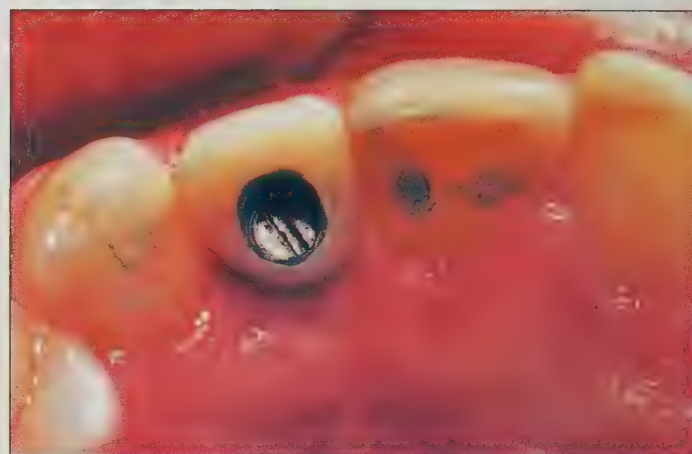
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There must be vision

There is a familiar story of a man who, walking along the street, finds a bag of coins. The sudden riches change him from a near beggar to a man of wealth. But unfortunately he spends the rest of his life only looking down, scanning the ground, continually relying on a repetition of luck. He misses so many of life's blessings: smiling faces, laughing children, glorious sunsets and the success of human endeavor.

Just a story, perhaps, but a message for all. No matter the task, human accomplishment needs more than luck. It requires vision; an upward look, scanning the horizon for an opportunity to improve not only self but the universe around. Although adversity may intervene, men and women with vision can change the world.

A century ago Margaret Fairless Barber writing in the "Roadmender" said, "Necessity can set me helpless on my back, but she cannot keep me there; nor can four walls limit my vision".

Two recent CDA "rejuvenations" bear out the vision theory. Consider the CDA Convention. Four years ago a CDA Executive Council member, (it is hoped he was kidding!), after a series of poorly attended conventions, suggested CDA get out of the convention business. "It's a loser," he said.

Others had more vision and confidence in the needs and wants of dentists. Dr. Michel Jahjah was recruited as Convention Chairman. Not with luck nor by chance but with knowledge, skill and vision he guided CDA through the most successful convention in memory.

Unaudited attendance figures from the recent Convention in beautiful Vancouver put the total number of delegates, exhibitors and guests at more than 5,750. Every lecture theatre was filled to overflowing to hear world recognized clinicians.

As early as last spring, convention planners had to increase the exhibit space to meet the heavy demand from dental suppliers. In the end, the exhibit area was filled to capacity, with 242 booths and a long waiting list. There wasn't a moment during exhibit hours when the aisles and booths weren't crowded.

Consider the CDA Journal. A few years ago it was languishing in a state of the doldrums. Readership was down, the flow of scientific material had slowed and advertising revenues were a concern. At an Executive Council meeting someone, (surely not the same person who had no faith in conventions?), indicated it may be time to get out of the publishing business.

Again, others had more vision, more faith. A new CDA work force, the Publications Committee, instigated and encouraged a revitalized editorial policy. The Journal continued to present quality refereed scientific literature in every issue and, at the same time, increased the amount of clinical material pertinent to every general practitioner. A network of over 20 scientific and consulting editors from across Canada was assembled to seek out the finest in dental presentations. New columns have been created to address practice management, financial concerns and laboratory problems. An open forum "It's My Opinion" is attracting comments on today's pressing concerns.

Results are gratifying. Interest in the Journal is increasing rapidly. A recent market test clearly indicates the CDA Journal is being read on par with any other national dental journal. There has never been a more healthy backlog of excellent scientific material from respected renowned authors.

A certain sign of success is the increase in advertisers' confidence. (It's about the money!). Revenues are increasing; production costs are decreasing. Innovation and ingenuity are not overlooked.

Need the Convention Committee or the Journal be satisfied? It is hoped, never! True vision has vast horizons. Robert Browning said it all in 'Andrea del Sarto',

*"Ah, but a man's reach should exceed his grasp,
Or what's a heaven for?"*

P. Ralph Crawford, DMD

Editor: Journal of the Canadian Dental Association

President's Column



'In the arena — working for you'

"The credit belongs to the man who is actually in the arena. . . ."

As I sat down to pen this column on membership, a sense of déjà vu overcame me. . . . Yes! I had issued an appeal to dentists to support the Canadian Dental Association with their membership dollars before — actually five years ago, in an Ontario Dentist editorial. As the then President of the Ontario Dental Association, I asked my provincial membership to look beyond the borders of Canada's largest province — to their national organization. The CDA at that time was lobbying the federal government for changes in the regulations of the Canada Health Act (which were seen as vital by all of the provincial associations) and CDA was successful in getting the changes.

Now, here I am again, looking for your support and ready to remind you of the many valuable ways CDA protects your interests.

A few statistics first . . . in 1988, 72 per cent of CDA's revenues were membership funded either via direct payment of dues or via corporate and licensing body transfer grants. The other 28 per cent was derived from the sale of publications such as Dental Health month materials, and from revenue from the product recognition program, from our increasingly successful Bank of Montreal Affinity Card program and from rental of office space at CDA headquarters.

In the same time frame, the Federal government collected 21 per cent of its revenue from sales and excise taxes and a majority of the balance from individual and corporate income taxes. Finance Minister Wilson's aim, via his goods and services tax, is to increase the left side of the equation with a promise to reduce personal income taxes with some of the largesse generated.

CDA is striving in a similar fashion to keep membership fee increases to a minimum while expanding revenue from the other side of the equation. Our Affinity Card program, for example, will generate x thousands in badly needed cash this year — money which will be returned directly to each member's pocket via lower membership taxes. Revenue generated from our new professional Products Recognition Program, our new Toothbrush Statement program, our national resource library at CDA headquarters, the electronic data interchange and our new communication department catalogue of pamphlets and specialty items will support our goal to increase the non-dues income to 40 per cent over the next two years.

There are approximately 250 men and women involved in CDA Committees and Councils from the Student Affairs level all the way to the Management Committee. I would estimate that 2 or 3 times this number are active in our provincial organizations. These are certainly impressive numbers considering our small national membership of some 15,000. If I had my way, every one of these individuals would enjoy complimentary membership just for the time commitment away from his/her family and practice. They are in the arena, working for you.

In the words of Theodore Roosevelt, "It is not the critic who counts, nor the man who points out how the strong man stumbled or where the doer of deeds could have done better. The credit belongs to the man who is actually in the arena; whose face is marked by dust and sweat and blood; who strives valiantly; who errs and comes short again and again; who knows the great enthusiasms, the great devotions and expends/spends himself in a worthy cause."

What I am asking of you today is to support the man in the arena.

Kevin L. Roach, BSc, DDS,
President of the Canadian Dental Association

CDA Convention '89 in Vancouver — a Triumph!

The lure of Vancouver's spectacular natural beauty, the sparkling imaginative architecture of the Vancouver Trade & Convention Centre and the hospitable late August sunshine were all contributing factors.

However most agreed that the reason Convention '89 was such a resounding success — the best attended in living memory, and perhaps of all time, should be attributed to the professional polish of "Mr. Convention in Canada" — Dr. Michel Jahjah — and the hard work of his skilful crew for many months prior to the event.

Most clinics were attended by overflow audiences, and even the pre-Convention presentations were so over-subscribed they were repeated on the second day.

In the exhibit area, filled to capacity by dental suppliers' booths, company representatives were elated by the throngs viewing their products, and the volume of sales posted.



The imaginative architecture of the Vancouver Trade & Convention Centre "under the five sails" was in itself an inspiration. On an elaborate pier extending into Vancouver's beautiful harbor it is frequently flanked by sleek cruise ships.



This view from the Trade & Convention Centre is also inspiring. It looks out on the downtown core of the dynamic City of Vancouver. All of this against a spectacular backdrop of lofty mountains.

The official opening, sponsored by Eurodent International of America, featured a colorful cast of ethnic culture, indicative of Vancouver's mix of racial backgrounds. In the Carnival Night that followed, dentists and their whole families

found something that amused, entertained or intrigued, everyone.

Spouses and their children praised the superb social program and tours arranged for their special interests.

Many noted, with great satisfaction, that there were none of the delays and line-ups for on-site registration frequently experienced at past Conventions. The most sophisticated computerized (by Exan) registration system ever developed was in place for Convention '89 and will now make for a speedy and efficient flow at all future conventions.

Attendance Breakdown

Initial statistics indicate the following numbers of participants:

B.C. Dentists	1,297
Dentists — CDA members	666
Dentists — non CDA members	71
	2,034
Hygienists	339
Assistants	450
Office Personnel	230
Technicians	130
Students	275

Spouses	360
Children	233
General	170
Exhibitors, guests, other	1,529
GRAND TOTAL	5,750



The registration area was very busy each morning but the new highly efficient computerized registration system coped with ease, minimizing the lineups.



A myriad of activities attracted a full-house attendance of dentists, spouses and children in the gaily festooned Ballroom of the Vancouver Trade & Convention Centre at Carnival Night.



"Bob" was front and centre at the CDA booth in the exhibition area. CDA Librarian Martha Vaughan, who helped greet the steady flow of visitors through the booth, was pleased to introduce him.



There was fun for all at the Carnival Night which followed the Opening ceremonies. Dr. Kevin Roach, CDA President, enjoyed the attractions as much as his two daughters, Rebecca, 8, centre, and Meghan, 6.



Registrants attended from a number of other countries, including Dr. Rafik Bagdady of the Department of Dentistry in King Fahad National Guard Hospital, Riyadh, Saudi Arabia. Dr. Bagdady, a graduate of the University of Glasgow, Scotland, was paying his first visit to Canada and was very favorably impressed with this country and the CDA Convention.

The Countdown is Over . . . Temporarily



Dr. Michel Jahjah
General Chairman
CDA Conventions

People . . . the 1989 CDA Convention in Vancouver was a tapestry of people! The lecture rooms were tearing at the seams; the halls were overrun by dentists, hygienists, assistants, office staff and technicians who had travelled to Vancouver in their quest for knowledge.

It was a time for class reunions, as messages from long-lost colleagues flashed across the screens of the sophisticated message centre, scattered throughout the convention centre. And everywhere, there was a fever of excitement, happiness and satisfaction.

The Opening Ceremony, sponsored by Eurodent, and held for the very first time in a CDA convention, was everything it promised to be: **SUCCESS**, spelled with capital letters! By the time the ceremony actually began late Sunday afternoon, 3,000 persons had crossed the threshold of the immense room reserved for the occasion. Minutes later, the Scottish pipers made their magnificent entry, at the year of the room, amidst a roar of bagpipes, and led what seemed to be an endless parade of performers towards the stage. It was an unforgettable moment for all! By the way, for those of you who attended . . . the stumble was staged!

People also invaded the vast exhibit hall on Monday morning, which rapidly became a very vibrant marketplace! The Honda display at the rear of the hall, with its latest car models, lawn-mowers, outboard motors and generators, provided a backdrop for the exhibition and a setting for the numerous drawings. Surprise crossed the faces of many happy winners!

In the registration area, the constant sound of busy printers echoed throughout the main entrance hall, a tangible proof of the new, highly advanced software program for on-site registration, developed by Exan Computers for CDA.

If you were not in Vancouver from August 26th to 30th, you missed a spectacular convention! You can, however, repair your omission by planning your attendance at the 1990 CDA convention in Ottawa. Take a few days off before and after the convention and LET US worry about organizing the most exciting calendar of events for you to choose from — to render your stay in Ottawa a memorable one! By now, we've learned the ropes . . . and also a lesson! The meeting room capacity in Ottawa will be drastically increased and many more lectures will be added to the program.

All you have to do is block these dates on your agenda:

August 25-29

Remember, it's easier to re-schedule patients than to cancel them!! Δ



Exhibitors in the filled to capacity exhibit area were generous in their compliments to Convention organizers for the large crowds of visitors to their booths and the heavy sales volumes they enjoyed.



Famed Macleans Magazine columnist and CBC "Front Page Challenge" panellist Allan Fotheringham presented the Murray McDonald Memorial Lecture. He is seen with Dr. Ted Ramage, President of the Canadian Fund for Dental Education, which sponsors the Lecture.



Dr. Max Florence of Toronto, winner of a Honda scooter at the Convention exhibit area, tries his prize after the drawing at the Vancouver Trade & Convention Centre.



Dr. Jack Niedermayer congratulates Dr. Christopher Overall, winner of the Canadian Dental Research Foundation Award. Dr. Overall conducted his research at the University of Toronto.



Some very special guests were on hand to enjoy the Murray McDonald Memorial Lecture at the CDA Convention. They are: (from the left): Dr. Ted Ramage, President of the Canadian Fund for Dental Education; Mrs. Winnifred Best, a sister of the late Murray McDonald; Mrs. Kit McDonald, widow of the late Mr. McDonald, and guest lecturer, Allan Fotheringham, colorful Macleans Magazine columnist and CBC's "Front Page Challenge" panellist, who managed to launch several of his characteristic "zingers" about politicians during his presentation.



Dr. R.G. Baynes (centre) of Surrey, B.C., is as pleased as he looks. He holds the ticket as the winner of a new Honda automobile in a draw in the exhibit area. The automobile was purchased by Healthco dental supply firm and the draw was arranged by the Honda company. The draw was made by CDA Convention Chairman, Dr. Michel Jahjah, (left) and Normand Senécal, Vice President of Healthco (right).



Past CDA President and CDA Journal Editor Dr. Ralph Crawford, (left) presented a colorful compilation of "President's Columns" in the CDA Journal to Dr. Jack Niedermayer as a memento of his writings as CDA President.



The 1988-89 Executive Council members posed following the annual CDA Board of Governors meeting in Vancouver. They are, front, from the left: Dr. Ron Markey, Past President; Dr. Jack Niedermayer, immediate Past President; Dr. Kevin Roach, 1989-90 President. Standing, rear, are: A. Jardine Neilson, Executive Director; Board of Governors member Dr. Barry Dolman; Dr. Gilles Dubé, President-elect; Governor Dr. Bernard Dolansky; Governor Dr. Bryun Sigfstead; Vice President Dr. Les Allen; Dr. Ray Wenn and Dr. Don MacFarlane, both members of the Board of Governors.



CDA Certificates of Merit were awarded to this group in Vancouver. They are, from the left: Dr. Ted Fantin, Trail, B.C.; Dr. James Graham, of the Data Processing Division, American Dental Association, Chicago; Dr. Serge Vanry, Past President of the College of Dental Surgeons of British Columbia; Dr. Marcia Boyd of the Faculty of Dentistry, University of British Columbia; Dr. Kenneth Pownall, Registrar, Royal College of Dental Surgeons of Ontario; Dr. William G. Leggett of Brampton, Ont., and Dr. G. William Burgman, of Kirkland Lake, Ont. Missing from this group were: Dr. Michel Jahjah, Convention Committee Chairman; Dr. Edward McIntyre a member of the Edmonton '88 Convention Committee, Dr. Andrew Toeman, who has served CDA's Committee on Health Care, and Kate MacDonald, who has been serving as a member of the CDA Council on Accreditation and Education.



Past President and Chairman of CDA's Taxation Committee Dr. Robert N. Hicks (right) receives a CDA Honorary Membership from Dr. Jack Niedermayer, in recognition of services to the Association.



Journal Editor and CDA Past President Dr. Ralph Crawford receives an Honorary Membership for his services to the Association.



One of CDA's highest honors, the Distinguished Service Award, was presented to this group. They are, from the left: Drs. Ted Ramage, Arthur Schwartz, Donald Steeves and Kenneth C. Bentley.



CDA's Award of Merit was conferred upon this group. They are, from the left: Drs. G. Frank Copithorne, of North Vancouver; Dr. John Phillips, of Oshawa, Ont., and Dr. Bruce Bowden, of St. John's, Newfoundland.

Computerizing a Convention (and the man behind it)

P. Ralph Crawford, BA, DMD

History was made at the 1989 CDA Convention in Vancouver!

In more than one way.

Apart from a record breaking attendance of almost 6,000 people, the Convention utilized the most sophisticated computerization for any event of its type. All was made possible through the genius of one man; Imtiaz Manji, President of Exan Technologies based in Burnaby, British Columbia.

Consider what was accomplished. Months before, tucked into a corner of "borrowed" office space at CDA's Ottawa headquarters the computer systems operated by three to five employees, performed new-found miracles in convention management.

With the arrival of a convention registration form the name, category and address were instantly recorded. Hotel accommodations, pre-registration courses, social events, children/spousal programs, and special events were logged into electronic wizardry. ID badges, tickets, receipts and even continuing edu-

cation credits were printed in seconds. It was fascinating to watch, and to listen, as unattended rolls of perforated paper "tick-ticked" their way through printers hour after hour — even on Saturdays and Sundays as the Convention date neared.

500 registrations in 45 minutes

On-site at Vancouver's Convention Centre, the cathode tubes, bytes, ROMs and RAMs continued silently on, in a manner never before realized. At the peak rush hour of the first day more than 500 on-site registrations were completed within 45 minutes. Just imagine how many ball point pens and man hours that would have consumed! Just think of the frustrated lineups avoided.

The Convention computer software tracked every event automatically. It was able to predict the future. It took the guess work out of the "numbers game" in planning scientific sessions, social events, meals and receptions. Budget and

audit control accompanied every event. Weeks before and minutes after there was constant control of people and dollars.

The Convention computer even performed those small but important personal requests. Questions such as, "Is my friend Charlie registered?" Instantly the computer said, "Yes", and provided the hotel where Charlie was staying. Complaints, and there were a few (after all, whose perfect?) were solved immediately if possible, and stored for future evaluation and avoidance.

Message Centre

A full color messaging monitor catered to those "people niceties". Telephone calls, appointments, etc., were alphabetically displayed in the main registration area. The Message Centre itself — at no cost — was a comfortable lounge at the Exan booth, tended by an efficient, pleasant Exan employee. A Fax machine, again at no charge to the CDA, logged more than 50 services per day.



Months of hard work prior to the Convention paid big dividends. The Convention Central Team is seen at the CDA office in Ottawa. Left to right are: Lisa Graziadei, Natalie Leclerc, Dr. Michel Jahjah, Convention Chairman and Janice Edgar. Missing: Sharon Speagle.



Opening Day! More than 500 on-site registrations were processed within 45 minutes.



Dr. Jack Niedermayer, then CDA President, congratulates Dr. Michel Jahjah, Convention Chairman, and Mr. Imtiaz Manji, President of Exan, for excellence in organization.



The Convention Message Centre.

How did all this happen? Like frequent displays of human accomplishment there is that strange mixture of genius, opportunity, challenge and chance. Five years ago Exan, a fledgling company, sold a dental computer package to Drs. Ken Neuman and Don MacFarlane for their West Broadway Dental Group in Vancouver. It didn't work!

The story is now jokingly told that Neuman and MacFarlane threatened to throw the computer off the Granville Street bridge (tied to the Exan salesman's ankle!?) if they didn't fix it.

"From mistakes I learn"

Imtiaz (pronounced Im-tee-as) Manji did indeed perfect the Neuman-MacFarlane system. "I love making mistakes", he said, "From mistakes I learn". That Vancouver "mistake" urged Imtiaz, (as he prefers being called), to develop his Exan company into one of the largest in Canada devoted to dentistry. He has never looked back. The company today employs 130 people across Canada; 40 of them based at the Vancouver company headquarters.

The dental convention computerization was again partly chance. Two years ago Imtiaz Manji sold a computer set-up to Dr. Michel Jahjah for his Montreal dental office, and the two became good friends. When it came time for Dr. Jahjah to plan the '89 CDA Convention he approached Imtiaz for a "donation" (about \$16,000). It might be assumed that when two people like Jahjah and Manji plan an event it goes beyond normal bounds.

Exan's involvement with the Convention went from a donation request to an offer of computer assistance, to the accomplishment of an ideal electronic convention system. Exan's original \$16,000 "donation" first grew to \$30,000. for "start-up" costs, which included an Olivetti 386 multi-user system with three screens and two printers, and eventually topped \$100,000. for the entire planning, programming and software. Henry Muzyka, Exan's top programmer, and two other Exan people, provided 18 man-months of expertise to perfect the CDA system. Exan loaned the Convention 18 units of hardware for the project.

Nothing was left to chance. Exan staff people were on site at all times to deal with problems. (There were few!). Two back-up systems, each capable of a one minute "swap-out", were at instant ready in the event of an emergency.

System capable of 100,000 registrations

The end result was a silent electronic "miracle" in Vancouver. A first ever complete convention computer program capable of not just 6,000 registrants but 100,000. Already Exan has been approached to handle other conventions — something they never imagined less than two years ago.

Imtiaz Manji — the man

What about Imtiaz Manji? It is quite a story. Born in Kenya 33 years ago, the handsome young man with a sincere ready smile always knew he had an exceptional ability with math and com-

puters. Winning a scholarship, he went to London, England, for advanced study. Emigrating to Canada wasn't easy he said, "I was poor, I was brown and had my parents to support". But ability knows few insurmountable barriers.

Retire at age 33?

Offering services in the newspaper classified section at \$25 an hour and then at \$20 an hour brought "absolutely zero results", he said. His first big break came when he negotiated his services to a large Saskatchewan cooperative firm. They had already spent over \$2 million on a computer system that didn't work. Imtiaz solved the co-op's problem and was on the way to success. He was never poor again. At age 33 he is able to retire. "Never!", he said.

A first fleeting impression may be that Imtiaz Manji is enchanted with his own ego. But that lasts only a moment. He is just every enthusiastic about everything he does and the absolute genuine sincerity quickly shines through.

When he says, "I have a gift; I'm not only the best systems analyst but I'm a first class marketer". Or, "everything I touch turns to gold. But I do it with integrity". A listener honestly doesn't get the feeling of self-emulation or arrogance. The man knows his capabilities and he certainly has integrity. The very name "Exan" was chosen because "ex" was to denote excellence.

Is this dynamic leader in an extremely competitive field just another one of those efficient human computers? Not at all. When asked of his personal life, the animated conversation is still present but

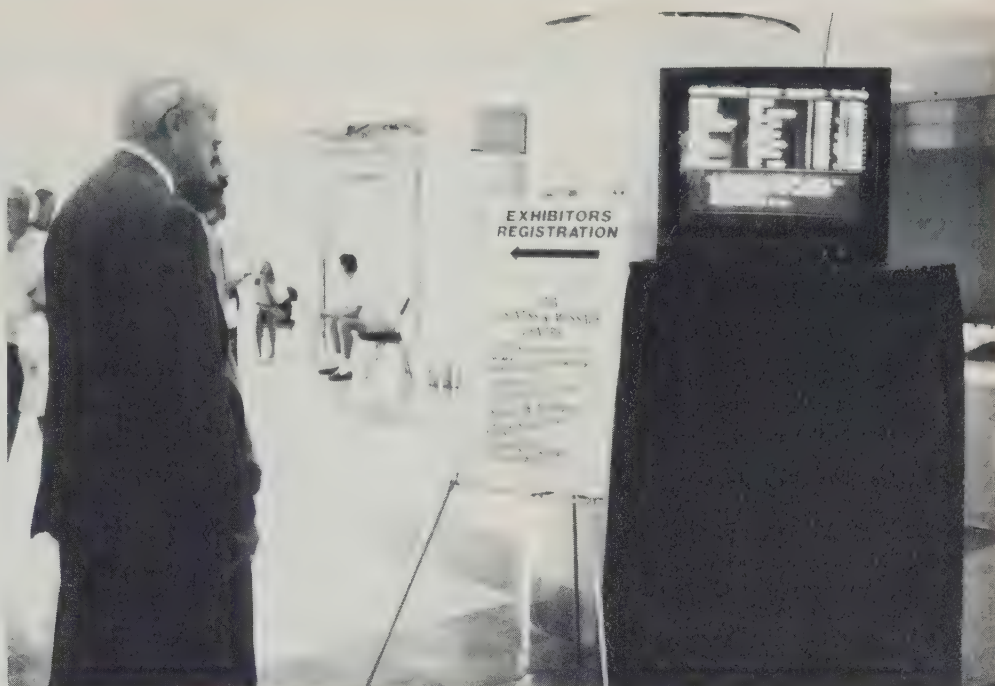
the mood and manner softens with endearment.

"I'm *really* in love with my wife", he says. "I have the perfect marriage". When the father of two boys, age eight and four, was asked when he ever has time for a home life it might have been expected Imtiaz would have that side of life organized also.

She owns me 'til Monday morning

"Mondays to Fridays I'm my own boss. I work long intense hours. But comes six o'clock Friday, my wife owns me until Monday morning. She's in control". He strives to have one long weekend a month and four weeks off a year.

We wish Imtiaz Manji and Exan well and already, the dental community is looking forward to the "computerization" of the 1990 CDA Convention in Ottawa next August. Δ



A dentist checks the message monitor . . . "Jack, phone your wife!"

Did you know?

Thanks to Dr. Peter H. Jacobsohn, associate editor of the Wisconsin Dental Association, for the following:

During the American Civil War, desertion by soldiers was commonplace. Men left the battle field in large numbers and just went home. Self-mutilation to avoid the draft or to be discharged from front line duty was a problem seen by both military recruiters and regimental surgeons.

The destruction of anterior teeth was a common method used to avoid the draft or to be transferred to non-combatant status. The war weapon used by the average soldier of the day was a single-shot, muzzle-loading musket or rifle. It required 11 separate steps to load and fire. The first step was to tear open a paper cartridge with the incisor teeth. Anyone unable to do so because these teeth were absent was unable to serve as a front line infantryman.

In an effort to discourage the practice of dental mutilation, the following announcement from the War Department appeared in local newspapers of the time:

"Those drafted persons who have knocked out their front teeth to procure exemption are informed that they will be accepted in the Calvary, where front teeth are not needed to bite off cartridges."

CDA Retirement Savings Plan

Unit values: (Funds are valued weekly)

Fund	Unit values as at	
	September 29, 1989	August 31, 1989
Bond & Mortgage Fund	69.42253	69.41699
Common Stock Fund	17.31437	17.50947
Money Market Fund	46.37363	46.02547
Balanced Fund	29.83614	30.05605

G.I.C. Fund

Term

	*Interest rates as at	
	September 29, 1989	August 31, 1989
1 yr	11.10%	10.85%
2 yr	10.80%	10.60%
3 yr	10.55%	10.35%
4 yr	10.55%	10.20%
5 yr	10.55%	10.20%

(*rates subject to change without notice.)

Total Assets (Market value) of the Plan as of:

September 29, 1989	August 31, 1989
\$116,780,319	\$116,772,491

For further information:



CDA RSP

Write:

CDSPI

Retirement Services Dept.
Suite 600
2 Lansing Square
Willowdale, Ontario
M2J 4Z3

or phone, toll-free:

Western and Atlantic Canada
and Ontario Area Code 807
only 1-800-268-5418
Quebec and Ontario, (except Area
Code 807) 1-800-268-3411
Metro Toronto Area . . . 497-7117

CDA/Dentsply Student Clinician Program featured nine clinics

The Nineteenth CDA/Dentsply Student Clinician Program was held in conjunction with the 1989 Convention of the Canadian Dental Association in Vancouver. The Program was again sponsored by Dentsply Canada, Ltd., through a special grant made to the Canadian Fund for Dental Education.

This year's program for Canadian dental students featured nine student table clinics. Students received an expense-paid trip to Vancouver to present their table clinic after placing first in their school's individual student clinician program.

Under the definition established by the Canadian Dental Association Council on Education, a table clinic is a table top demonstration of a technique or procedure concerned with some phase of research, diagnosis or treatment as related to the profession of dentistry.

Mr. Steven Im of the University of Manitoba claimed the First Place Award for his clinic titled "Shear bond strength of composite resin repaired polymeric denture teeth." Miss Isabelle Baillargeon of Laval University earned the Second Place Award for her clinic on "Perte prématurée des canines primaires inférieures." An Honorable Mention Award also went to Miss Susan Pyke of Dalhousie University for her study on "Centric relation — myth or reality?" Mr. Im has been invited to attend the 131st Annual Session of the American Dental Association at Boston, MA during October 13-17, 1990 as an honored guest of Dentsply International. Miss Baillargeon and Miss Pyke received cash awards of \$150 and \$100 respectively.

Other students participating, their schools and clinic titles were: Andrew A. Albert, University of Alberta — "Laser enhanced dentinal bonding"; Richard C. Bell, University of Saskatchewan — "Pulp temperature changes and the use of visible light polymerization"; Irene Chao, University of Toronto — "Orthodontic practices, product usage and the development of skin lesions"; John Christensen, University of British Columbia; John Hill, McGill University — "The composite bond to dentin using various adhesives"; and Peter Taylor, University of Western Ontario — "An assessment of three lighting systems for taking porcelain and composite shades in the operatory."



Participants and sponsors of the Nineteenth CDA/Dentsply Student Clinician Program gathered for this photograph following the Dentsply Reception and Dinner honoring the students. Seated (l. to r.) are Dr. Jack W. Niedermayer, President of the Canadian Dental Association; Irene Chao, University of Toronto; Mr. Burton C. Borgelt, Chairman and Chief Executive Officer of Dentsply International; Susan Pyke, Dalhousie University; Dr. Richard J. Smith, President of The Alumni Association of Student Clinicians-American Dental Association (SCADA); and Isabelle Baillargeon, Laval University. Standing (l. to r.) are Richard C. Bell, University of Saskatchewan; John Christensen, University of British Columbia; Andrew A. Albert, University of Alberta; Peter Taylor, University of Western Ontario; and John Hill, McGill University. Mr. Steven Im from the University of Manitoba participated in the Program but is not pictured.



Mr. Steven Im of the University of Manitoba received the First Place Award. His clinic is titled "Shear bond strength of composite resin repaired polymeric denture teeth."

A reception and dinner honoring student clinicians who hosted on Tuesday evening, August 29 by Mr. Burton C. Borgelt, Chairman and Chief Executive Officer of Dentsply International, representing the sponsors.

Distinguished guests at the head table included Dr. and Mrs. Jack W. Niedermayer, then President of the Canadian Dental

Association; Dr. and Mrs. Ron J. Markey, Immediate Past President of the Canadian Dental Association; Dr. and Mrs. Ted Ramage, Chairman of the Canadian Fund for Dental Education; and Dr. Richard J. Smith, President of the Alumni Association of Student Clinicians-American Dental Association (SCADA). Δ

The Journal introduces 10 Consulting Editors

The Journal continues to make every effort to bring readers high quality and relevant information of value to the dental profession.

In introducing the 10 Consulting Editors, the Journal is grateful for their kind cooperation. This group are considered authorities in field and do not fall within the CDA guidelines for the nine official specialties.

Because of their background and training, they are often regarded as spokespersons for their disciplines.

Consulting Editors – Terms of Reference

Preamble: The continuing education of its readers is a major objective of the Journal of the Canadian Dental Association. To achieve this goal, the Publications Committee utilized the services of a team of consulting editors whose collective knowledge, experience and energy will enhance the content of the Journal.

Terms: Consulting Editors shall:

- (i) If dentists, be members of good standing of the Canadian Dental Association.
- (ii) If non-dentists, be members in good standing of affiliated national professional organizations, or any other group, professional or otherwise, which the Publications Committee may wish to recognize.
- (iii) Be appointed by the President of the Canadian Dental Association (on recommendation of the Editor) to a one year term, renewable annually.
- (iv) Be encouraged to submit articles, news items and general interest comments pertaining to their particular field of expertise.
- (v) When requested, act in the capacity of referees and/or advisors for scientific articles, texts, book reviews, etc.
- (vi) Be expected to offer the name of a suitable successor. Δ

Canadian Dental Hygienists' Association



Carol Worobey

Ms. Carol Worobey, who serves as the Executive Director of the Canadian Dental Hygienists' Association, has worked in that field of endeavor for the past 20 years, following graduation from the University of Manitoba.

Carol has worked in private practice, in public health and dental assisting education at the Kelsey Institute in Saskatoon, Saskatchewan, and in Winnipeg, at the Red River Community College and Tec-Voc School.

Since 1983, she has focussed her skills on the position of

Executive Director of the Canadian Dental Hygienists' Association. Ms. Worobey has consistently served the profession of dental hygiene through volunteer commitments. A CDHA member since her graduation, she has held executive positions at both the provincial and national levels.

In 1973 Carol was named President of the Saskatchewan Dental Hygienists' Association. Four years later, after serving on the CDHA Executive Council, she contributed her talents to the Presidency of the CDHA. Δ

Canadian Dental Assistants' Association



Elaine Wesley

Elaine Wesley, who has, since 1978, served as the first Executive Director of the Canadian Dental Assistants' Association, will serve as JCDA Consulting Editor representing the CDAA. A native of Lethbridge, Alberta, Ms. Wesley graduated with honors from the Wayne School of Dental Assisting in Chicago, Illinois, in 1960.

She has served 18 years in private general and orthodontic dental offices.

Ms. Wesley is a certified dental assistant with the Alberta Dental Assistants' Association and

the Canadian Dental Assistants' Association.

She has been the recipient of several honors for her service. She received the Canadian Dental Association's Certificate of Merit in 1979, a 25-Year Membership Award from the Canadian Dental Assistants' Association in 1985, and a 25-Year Membership Award from the Alberta Dental Assistants' Association in 1987. She is currently completing an accounting degree with the International Accountants' Society. Δ

Dental Materials



Dr. Peter T. Williams

Peter T. Williams, DDS, BASc, MS, who is Associate Professor and Head, Section of Dental Biomaterials Science, Faculty of Dentistry, University of Manitoba, has agreed to serve as Consulting Editor to the Journal in the field of Dental Materials.

"Dental materials always has been and will continue to be, a very important part of clinical dentistry", Dr. Williams believes.

His dental career began in Milton, Ontario, where he conducted a private practice from

1964 to 1966.

His teaching career at the University of Manitoba began in 1970, as Assistant Professor, Dental Materials in the Faculty of Dentistry. In 1975 he became Associate Professor in Dental Materials, the position he now holds.

A member of the Canadian Dental Association, Dr. Williams has served since 1976 as a member of CDA's Council on Dental Materials. He has also been a member of the Canadian Standards Association Committee on Dentistry since 1976. He has served as a member of the Canadian Advisory Committee of the International Organization for Standardization since 1979. Δ

Special Care (Geriatrics, Handicapped)



Dr. Rita R. Hurley

Rita R. Hurley, BA, MSc, DDS, MPH, is Chairman of the Department of Community Dentistry, Faculty of Dentistry, McGill University, Montreal. She is also an Assistant Professor in that Department. In addition, she serves as Coordinator of the Geriatric Dental Program at the McGill dental faculty in the Departments of Removable Prosthodontics, Oral Diagnosis and Community Dentistry.

She has been much involved in community dental services, for handicapped children, at institutions for the aged and at institutions for convalescents and rehabilitation centres. Presently she is involved at the Henri Bradet Centre, the Julius Richardson Convalescent Hospital, the Montreal Association for the Blind and the Montreal General Hospital. She is also associated with services at the Lethbridge Rehabilitation Centre.

She has served the Canadian Dental Association since her student days. From 1980 to 1983, she was Student Governor on CDA's Board of Governors. In the same period, she was a member of the CDA Council on Student Affairs. In 1982 and 1983, she was a member of the CDA Council on Education, and from 1982 to 1987, was a member of CDA's Membership Committee. Δ

Nutrition



Nina E. Burgess, BSc, MEd

Nina Burgess, BSc, MEd, will serve as a Consulting Editor to the Journal of the Canadian Dental Association in the important realm of Nutrition.

A graduate of the Universities of McGill and Toronto, she is the Nutrition Consultant in the University of Toronto's Faculty of Dentistry.

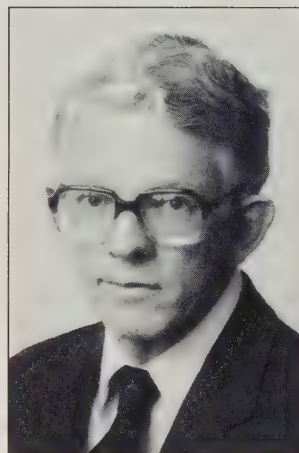
A native of Quebec, Ms. Burgess taught in high schools in Quebec, British Columbia and Ontario, before joining the Preventive Department at the University of Toronto.

She is currently involved in the promotion of better counselling skills, to improve communication between dental professionals and their patients.

Her husband, Dr. Ralph Burgess, is a professor (Preventive Dentistry) in the Faculty of Dentistry of the University of Toronto. He is also Coordinator of the BScD program for Dental Hygiene.

The two were co-authors of the paper "Diet and Dental Caries" published (with permission from the National Institute of Nutrition Review) in this Journal September last (JCDA, Vol. 55, No. 9; p. 699-702). Δ

Pharmacology



Dr. David M. Paton

David M. Paton, MB, ChB, MD, DSc, FRCPC, FRACP, who will serve as the Journal's Consulting Editor in the field of Pharmacology, has pursued a career in widely divergent corners of the World. It began in the Republic of South Africa, where he graduated in medicine in 1961, from the University of Cape Town. After an internship at Groote Schuur Hospital in Cape Town, he served as a lecturer for two years in pharmacology at his Alma Mater.

In July of 1966, he came to Canada where he joined the Department of Pharmacology at the University of Alberta. He was promoted to Professor in 1973 and became Acting Chairman of that department in 1974-75.

The next phase of his career took him to New Zealand. In January of 1978, Dr. Paton became Foundation Professor of Pharmacology and Clinical Pharmacology at the University of Auckland.

In January of 1988, Dr. Paton returned to the University of Alberta as Professor and Chairman of the Department of Oral Biology. Δ

Forensic Dentistry



Dr. Robert B.J. Dorion

Robert B.J. Dorion, BSc, DDS, Certificate in Forensic Dentistry, Diploma American Board of Forensic Odontology, has served as Director of Forensic Dentistry, Laboratory of Legal Medicine, Ministry of the Solicitor-General, Province of Quebec, since 1973.

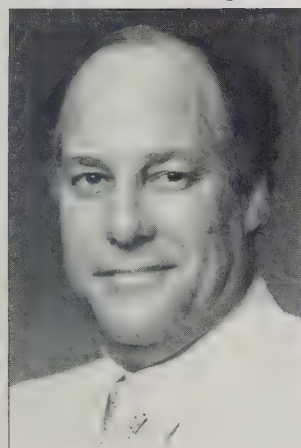
He served as President of the Odontology Section of Canadian Society of Forensic Science from 1975 to 1977 and served as Chairman of the Committee on Recommended Methods, Odontology Section, of the American Academy of Forensic Science in

1976-77. . . In 1978-80, he was President of the Canadian Society for Forensic Dentistry.

In other areas, Dr. Dorion has been a lecturer at the Canadian Police College (RCMP), and was Consultant on Forensic Dentistry, Investigative Tests for Canada's Law Reform Committee, in 1982-83.

In the international sphere, Dr. Dorion was Acting Chairman of the Bylaws Committee of the American Board of Forensic Odontology, and was President and Chairman of the Board of that organization in 1985-86. △

Practice Management



Dr. Robert R. Brandon

Robert A. Brandon, DDS, who is Assistant Professor, Division of Community Dentistry, University of Western Ontario, London, will serve as the Journal's Consulting Editor in the field of Practice Management.

He graduated in dentistry from the University of Western Ontario in 1974 and until 1977, conducted a private practice in Marathon in northwestern Ontario, an underserved area.

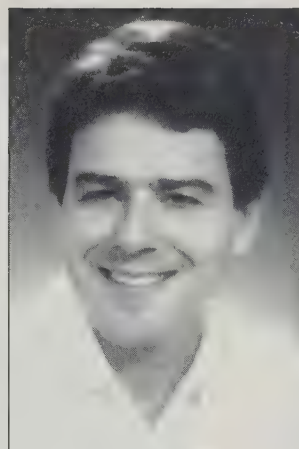
Dr. Brandon has been a valued member of the Canadian Dental Association's Council on Student Affairs since 1982, and since

1986, has been a member of the Board of Governors of the Ontario Dental Association. He also serves as a member of the Board of Governors on the Ontario Health Professionals' Assistance Program.

He is a member of the Faculty of Dentistry Council at the University of Western Ontario and has, since 1977, been Faculty Representative for Northern Health Services.

Since 1985, Dr. Brandon has also served with the Royal College of Dental Surgeons of Ontario Remedial Faculty, in Dental Management. △

Anaesthesiology



Dr. Earle R. Young

Earle R. Young, BSc, DDS, BScD, MSc, FADSA, is Assistant Professor in the Department of Anaesthesia, Faculty of Dentistry, University of Toronto, and Fellow in Anaesthesia at the Wellesley Hospital, in Toronto.

Dr. Young has lectured at national dental seminars, has conducted many dental continuing education courses and received prestigious awards for his teaching skills. He received the Bruce Hord Master Teacher Award earlier this year. His biography has been requested for the Canadian Who's Who.

He serves as the Ontario Dental Association's Health Care Committee representative to the Ontario Medical Association's Committee on Drugs and Pharmacotherapy.

Dr. Young has been a consultant on proposed articles for this Journal and other dental publications and as advisor for Med Check Canada Ltd.

He has been involved in extensive research, particularly in the area of anaesthesia use in dental practice. Several books, and revisions of those books, on the subject of anaesthesia, have been published by Dr. Young. △

Infection Control



Dr. John Hardie

John Hardie, BDS, MSc, FRCD(c), is head of the Department of Dentistry at the Ottawa (Ont.) Civic Hospital, and is serving as Chairman of the Canadian Dental Association's Publications Committee.

In 1984, he was named as CDA's liaison to the Health and Welfare Canada National Advisory Committee on AIDS.

Dr. Hardie is a graduate of Glasgow University, where he received his BDS degree in 1963. He later was a resident in surgical and anatomic pathology at the University Hospital,

London, Ont., and in 1978, was awarded a MSc in pathology, from the University of Western Ontario.

From 1963, until he came to Canada in 1966, he gained general practice experience as dental officer at a Royal Air Force base at King's Lynn, Norfolk, England.

He has served as an instructor, associate professor and professor at the University of Western Ontario, University of Alberta and the University of Toronto, and is presently Clinical Associate Professor in the Department of Pathology at the University of Ottawa.

Dr. Hardie has also served as a member of CDA's Council on Hospital and Institutional Services and was chairman of the scientific program committee for the 1985 annual Convention in Ottawa. △

'Grand old man' of oral pathology passes at 76

Dr. Harold Alexander Hunter DDS, MScD, Emeritus Professor of Oral Pathology at the University of Toronto, died on July 10th, 1989, in Sunnybrook Medical Centre, Toronto, at the age of 76 years.

He was born in Toronto and educated at Crescent School, Appleby College and the University of Toronto, graduating DDS in 1941. From 1941 to 45 he served in the Dental Corps of the Canadian Armed Forces.

On his return to civilian life, Dr. Hunter decided to pursue an academic career and obtained a Fellowship to study pathology at the Zoller Memorial Clinic, University of Chicago, from 1946-48. At that time there was no recognized specialty of oral pathology and hence no systematized training courses in the subject. However courses in various aspects of pathology were available and also experience in autopsy studies and in research methods, so an individualized course was constructed for him. It seems probable that Dr. Hunter was the first Canadian dentist to take formal post graduate training in pathology.

He was appointed to the Faculty of Dentistry, University of Toronto, when he returned to Canada in 1948 as an associate and later full professor. His responsibilities initially were to teach and perform research in oral pathology and also, on a half time basis, to act as Director of Clinics. He shared the position with Dr. J. Kreutzer. Subsequently he devoted all his time to his own discipline.

In 1954 he was awarded the degree of Master of Science in Dentistry. His thesis was a report of research into the effects of injections of fusospirochaetal materials in experimental animals. The thesis is written in the clear, concise and incisive manner which typified his academic activities in general.

Dr. Hunter became a Fellow of the American Academy of Oral Pathology in 1958, by examination, and in 1978 was awarded an Emeritus Fellowship. In 1969 he was elected to a charter Fellowship in the Royal College of Dentists of Canada. He was the first President of the Canadian



Academy of Oral Pathology, from 1966 to 71. He retired in 1973.

Apart from undergraduate and post-graduate teaching and research activities, and he published widely in the professional and scientific literature, Dr. Hunter had primary responsibility during his tenure for the oral pathology diagnostic service that has been provided by the University of Toronto since 1930. During his long professional life he acquired great expertise in this discipline. In association with Dr. C.H.M. Williams and Dr. D.L. Anderson, he also introduced an oral cytology service in the mid-sixties to assist in the earlier diagnosis of oral cancer.

Harry was a gentle, kindly person of a somewhat retiring disposition and was possessed of a fine dry sense of humour which was never long absent from his conversation or his lectures. His principal hobby was sailing and he designed his own boats. He spent many happy hours pursuing this and other leisure activities at his cottage on the family estate on Lake Simcoe. △

J.H.P.M.

Obituaries/Nécrologie

Gaudet, George A.: Diplômé de l'Université de Montréal en 1944, le Dr Gaudet était praticien privé à Moncton, au Nouveau-Brunswick et membre permanent de l'Association dentaire canadienne et de la Société dentaire de Nouveau-Brunswick. Il laisse dans le deuil sa femme et deux fils, les D^{rs} Roland A. et Francis A. Gaudet, tous deux praticiens dentaires à Moncton.

Holmes, Lionel Stanley: A graduate of the University of Alberta in 1941. He served from 1941 to 1945 with the Royal Canadian Dental Corps. Later he practised dentistry in Wetaskiwin and Red Deer, Alberta.

Law, Martha E.: A graduate of the Royal College of Dental Surgeons of Ontario in 1923, Dr. Law was one of the first women dentists in Ontario. She conducted a long-time practice in Toronto. Dr. Law was also President of the Canadian Federation of University Women (1952-55).

Robinson, William George: A graduate of the University of Toronto in 1949, Dr. Robinson practised dentistry in London, Ontario.

Did you know?

Sex relieves stress!

A Reuter new item from Helsinki revealed that the Finnish Health Ministry plans to introduce legislation that will allow people suffering from stress time off for sex holidays to help them recuperate.

A top Lutheran church official said she welcomes the government intent, stating, "People's sex lives can be really troubled by the fact they can't get time off from their job. . We know how much it means for people to get a chance to retreat from their everyday lives."

(The Journal has yet to finalize its plan to poll Canadian dental offices to determine how many agree with the Finnish law!)

Dr. David B. Kennedy, who practises pediatric dentistry and orthodontics in Vancouver, has become the first Fellow of the Royal College of Dentists of Canada to earn a Fellowship in a second specialty.



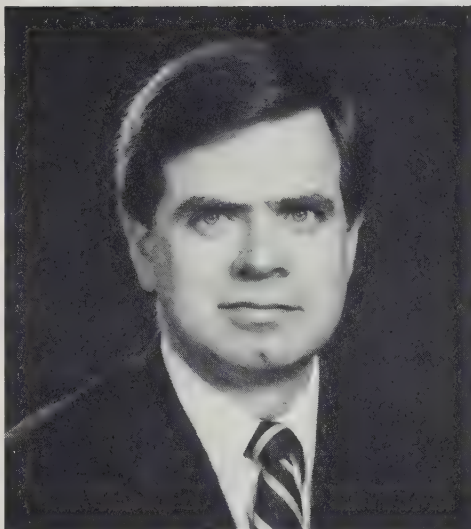
Dr. David B. Kennedy

A Fellow in pediatric dentistry since 1976, Dr. Kennedy pursued College examinations in orthodontics, leading to a Fellowship this year in that specialty. He had been a frequent examiner in pediatric dentistry until his appointment as Chief Examiner in that specialty, in 1987.

He was presented with his latest diploma at the College Convocation held in Vancouver in August.

Other new Fellows admitted to the College at that Convocation were: in Dental Public Health, Dr. J.L. Leake, Toronto; in Oral and Maxillofacial Surgery, Drs. G.M. Cousens, Ottawa; W.L. Frydman, London; H.A. Gretzinger, Sarnia; and D. Ricard, Hull, Que. In Oral Pathology, Dr. J.G.L. Lovas, Halifax; in Orthodontics, Dr. R.W. Reey, Toronto; in Pediatric Dentistry, Dr. W.G. Croft, Nanaimo and Dr. S.J. Weinberger, London, and in Prosthodontics, Dr. J.N. Walton, Vancouver. △

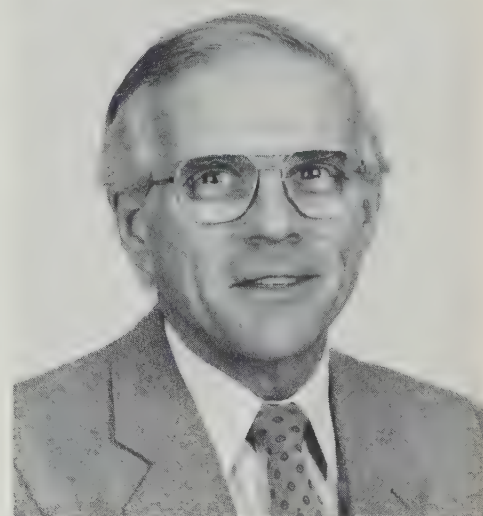
Alberta Radiologist is new RCDC President



Dr. Charles Baker

Dr. Charles Baker, DMD, MScD, FRCD(C), of Edmonton, is the new President, and **Dr. Guy Maranda**, DDS, FRCD(C), Québec, the new Vice-President of The Royal College of Dentists of Canada, both for a two-year term to 1991.

Dr. Baker was first elected to the RCDC Council in 1984 as the representative of the Oral Radiology Section of the College, and has served on the Executive Committee of the College's Council since 1986. He earned his DMD at the University of Manitoba in 1968, an MScD at the University of Toronto in 1975, became a certified Radiologist and a Fellow of the RCDC in 1978. He is presently Professor and Chairman of the Department of Stomatology at the University of Alberta, where he was also recently named Acting Assistant Dean, Clinical Affairs. Dr. Baker was a founder of the Canadian Academy of Oral Radiology in 1973, and was the Academy's President from 1984 to 1987. Since 1968 he has been a member of the Omicron Kappa Upsilon honour dental fraternity.

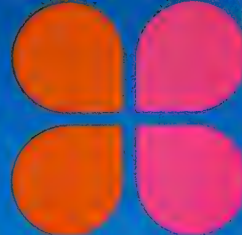


Dr. Guy Maranda

Dr. Maranda was re-elected to the Council of the RCDC by the Oral and Maxillofacial Surgery (OMFS) section of the College in 1989 after having previously served a three-year term 1984-87. He went to the University of Ottawa for his pre-dental education and obtained his DDS at the University of Montreal before going to the University of Pennsylvania to complete the graduate program in OMFS. He has been a Fellow of the RCDC since 1972, and has since acted as an examiner in the specialty for the College. Dr. Maranda has served in many capacities in the provincial and national OMFS associations and has held offices with the Quebec Association of Oral and Maxillofacial Surgeons and the Order of Dentists of Quebec (ODQ). He is currently president of the Committee on Specialists and Specialization of the ODQ, professor agrégé at Laval University and represents the RCDC on the new Council on Accreditation of the CDA. △

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Retirement — Who, me?

by Dr. Roger Porter

What comes to mind when you hear the word retirement? Sixty-five — free at last — old age — senior citizen — how am I going to live — knots in the stomach — if I could do it over again — excitement — looking to the time when your personal wishes and goal fulfillment are priority — your reaction will depend on what you have been doing about it.

First, let us define retirement. I thought way back when I became rich, I was going to retire. If someone would have asked me what I was going to do I probably would have said retire — retire was what I was going to do. Pretty vague isn't it? Are your plans any more specific? Consider this:

It wasn't what he expected. After working five days a week for 39 years, Dr. Jones was looking forward to the carefree days of retirement he had been dreaming about for as long as he could remember. While he didn't have anything specifically planned for retirement, he was confident that he would enjoy living "the spontaneous life".

But, only a month into retirement, something felt wrong. Dr. Jones was bored and restless, with too much time on his hands. He missed his daily routine of going to the office, and never having had the time to cultivate outside interests and activities, Dr. Jones found himself listlessly moping around the house.

His marital relationship was becoming tense. Mrs. Jones was not accustomed to having her husband constantly around, and complained about having to entertain "her second child". She had no idea of what she had bargained for when he retired.

Don't look now, but that scenario is all too typical. Don't fall into the trap, blindly rushing into retirement, or you will set yourself up for much disappointment. It is fine to be financially secure in

retirement, but there are many other factors that you must look at. Also consider this:

- 1) You have enjoyed considerable status in the community. Will it remain so?
- 2) Will you remain in the same community?
- 3) How will you live when you have lost the income from your practice?
- 4) Will your lifestyle remain the same? Do you want it to?
- 5) Your hobbies will now become full time entertainment — will they lose their appeal?
- 6) Some of your friends will still be working.
- 7) What will you do with the extra forty hours per week you will have available?
- 8) If you have developed ideas to fill your time, will you be able to afford to realize your goals?
- 9) What is your marital status (stability)?

So what is retirement? It obviously can't be an event that occurs at age 65 that requires no planning. Let's define it this way. Retirement is planned transition from one stage of life to the next. Planned is the key word. Anything less is a disaster not retirement. This is evidenced by the many people who are active and vibrant in their profession but dry up and blow away when they retire with no planning or definite goals.

In order for planning to take place one must have developed goals and objectives. Is it too early to plan? Is it too late to plan? The answer is obviously no, it is never too late. Of course the activity and procedures involved with early planning will be different from those involved in late planning, but in all stages goal setting and planning are essential for a satisfying life.

It is not my intent nor am I qualified to give instruction in retirement planning in any specific way. But let's consider this.

Can we produce quickly (say within one minute) ten short term goals, ten medium term goals and ten long term goals? If we can't then we are perhaps looking at a rather unplanned life and most certainly an unplanned retirement. Our first order of priority is to establish these goals. If we have already developed to some degree our goals and objectives, we then need a plan of action to be able to realize them. Of course long term goals are more general in nature and may change somewhat with time. Trade offs will have to be made and goals will need redefinition as time goes on but that's easier when we have a plan.

But, you say, I'm too busy with my practice etc. to set up that kind of plan and don't have the experience to do it. How do I get this kind of information. Need help? Help is available. Know CDSPI? We have a retirement counselling service. I have attended the introductory day long session and subsequent to that have been involved in two private sessions with CDSPI. I liked the service. It's the best deal around. Don't attend with the idea that CDSPI is going to make you rich. That's not the idea of the service. But what CDSPI will do is help you define your goals and objectives and develop a plan for realization of them.

For many of us there will be a good number of years after retirement from dentistry. It's a time that needs planning, so that these years can be as productive and fulfilling as your years in practice. Look at the following subject headings taken from the counselling manual and if there are areas that you haven't paid much attention to, then call CDSPI and get started.

- financial planning
- estate planning
- valuing a dental practice
- health and nutrition
- developing a plan of action for retirement Δ

The DAP Advisor offers information, ideas and advice to improve dentist/patient communication, raise awareness about good dental health, and help your practice become busier.

You control the supply of reading material in your office. To that extent, you can determine what your patients read during their time there. Since it is in your, as well as their best interest to spend it reading good dental literature, you might want to make it the only material available.

The Walls Have Mouths

Communicating the prevention message is more than a matter of conversing with your patient. Although conversation, of course, is critical to a patient's understanding of and appreciation for good dental health, the message is most effective if reinforced in other ways. Your own office, for example, is potentially a powerful communication vehicle.

From a communication standpoint, there are two reasons why your office is so crucial. First, it is a self-contained environment in which you control the ebb and flow of information. Second, every working day is it inhabited by something most communicators crave—a captive and receptive audience.

Think of the typical sequence of events. Your patient sits in the waiting room, passing the time in some way or another until you are ready for the appointment. Then the patient sits in your examination room chair looking at the wall or ceiling. To a large extent, you can make sure that waiting room time is not spent leafing through the latest Macleans and that chair time is not spent staring blankly at a wall.

To see if your office is "communicating" well, take a few moments to complete this checklist.

Check "YES or "NO" after the following statements:

My waiting room contains dental education reading material.	YES	☐	NO	☐
These materials are accessible.	YES	☐	NO	☐
They are on topics of interest to my patients.	YES	☐	NO	☐
They are kept neatly and arrayed attractively	YES	☐	NO	☐
I make use of wall space in my waiting room by hanging posters promoting dental health.	YES	☐	NO	☐
I make use of inner office walls space by posting dental health messages where patients are most likely to see them.	YES	☐	NO	☐
Messages in reading materials and on walls reinforce each other.	YES	☐	NO	☐

If you answered "yes" to at least six of these statements, good going! You are making good use of your office as a communication vehicle, and your patients have undoubtedly benefitted.

If you want to replenish your materials, or just spruce up your current stock, you can consult the CDA catalogue. It contains everything you need to keep your office "communicating".

The DAP Advisor is a service of CDA's Dental Awareness Program, an ongoing campaign dedicated to helping all Canadians keep their teeth Good For Life.

Some answers to questions about 'Quest'

Editor's Note: Dr. Blatchford of Quest Canada requested equal space in this Journal to offer a rebuttal to Rebecca Dufton's July article. We present the following (edited) letter from Dr. Blatchford.

I am pleased to have the opportunity to respond to the recent CDA article on the Practice Management Course called Quest. It appears that the allegations and rumors reported in the *Winnipeg Sun* which was created when a dental staff member was fired, are now being quoted and requoted as "fact."

I feel very strongly and positively about my profession of dentistry and want nothing more than to have fee-for-service, private-practice dentists be successful because of patients being served well.

I suspect open-minded dentists are not sure what to make of the newspaper coverage and would like some questions about Quest answered. The main issues are:

What is the association of Quest to the Winnipeg dentist under investigation by the Manitoba Dental Association?

A dentist who has taken Quest is under investigation for keeping an Autopac overpayment cheque and performing unauthorized dental treatment on two patients. I do not know if the allegations are true or not. I do know that I emphatically counsel clients to do only what is ethically correct and legal in their province.

I find it curious that the dentist's alleged misconduct is being laid solely on Quest. Are our ethics not a composite of many sources — dental school, family, continuing education, church? To assume that all other decision-making influences were wiped out in a few Quest sessions is, by any reasonable view, a huge leap of faith.

An investigation into Quest's role in this alleged misconduct was publicly announced in Manitoba in April. I welcome this inquiry for the opportunity to clear the air about Quest. I have yet to be contacted.

Is Quest an EST experience? No. Quest is all about quality dental service and business excellence. It is not an EST course, nor a bridge to EST. If you have

any doubts, call the Werner Erhardt organization in San Francisco to check any possible affiliation.

Mixed in with this talk about EST has been the suggestion that Quest employs techniques associated with cults, such as forcing people to reveal their personal values. Again, this is plainly false. This is not the purpose of the program.

There is much made of Quest's suggestion of hugging. It is a sad comment on our times when it is considered "abnormal" to hug. Hugging is suggested as studies reveal that anxiety with dental patients is helped when you can comfortably touch their hand, arm or shoulder plus there is a human dimension among dental staff members when there is an opportunity to hug.

No one is forced to hug or touch. However, we are in the health care industry where we need to demonstrate our caring and compassion. Quest dropped the suggestion to hug many months ago. It was a minor part of the program and when some people felt uncomfortable, we stopped making the suggestion.

Does Quest encourage assignment of benefits? No. In fact, I have no position on assignment. Financial practices vary from region to region and if it's ethical to participate in assignment and if it is in the best interest of a client to participate, then I say, "Participate." I have counselled some of my clients NOT to participate in assignment and I will continue to do so if it's in my client's best interest.

What impact does Quest have on a dentist's staff? In our offices, the dental staff enjoys two benefits: enhanced job satisfaction and increased earning potential. In return, a dentist can rightly expect more professionalism and a higher commitment to doing the job well.

A dentist has a right to staff his/her office based on performance and skill level. Periodic performance evaluations give the employee an opportunity to improve and the ultimate decision lies with the dentist.

Yes, sometimes staff members have been fired in my clients' offices. That is how things work in any business. Yet, when it happens in dentistry, it is somehow wrong. One of the main axioms of any successful business is to surround yourself with enthusiastic, skilled team players.

What influence does Quest have on a dentist's mental state? There have been unsubstantiated rumors that somehow, dentists are put at risk by taking Quest courses. I would like to share with you how Quest has helped many dentists, but I respect their right to privacy.

Most dentists who have taken our courses do feel better about themselves and the contributions they are making to dentistry. They are pleased with their profession and feel positive about future success. Are there exceptions? Sure. But that is not a function of Quest. It is a function of the individual involved.

What is the level of dental care Quest promotes? Think back to your days in dental school when we were taught to give our patients ideal care — the care required to restore a patient's teeth to the best condition possible. I teach that patients should be offered choices and one of them is definitely ideal dentistry. This is the same treatment you would offer to your own family or another dentist.

What seems to upset some people is that this approach runs counter to the norm, which is to do only dental care covered by insurance. Is this ethical conduct to limit a patient's options because of his insurance plan?

I know Quest is not perfect. As a teacher and business consultant, I am always examining and changing to meet the needs of the marketplace. Are my methods out of the norm? Most practice management seminars are a single shot motivator. What I offer is a coaching relationship so that the Doctor's goals are actually realized through planning and commitment.

Quest is really basic business skills, something that has been outside the arena of dentistry for too long. I'm certain it would be easier for me to let things ride or sugar-coat problems. I won't do that. If I did I would be letting down my clients, their patients, and our profession.

For those who continue to be skeptical, I ask just one small courtesy. See a Quest seminar and make your own judgement.

Heresay and anonymous quotes should be left to movie magazines.

Dr. William Blatchford
Quest Canada Corvallis, Oregon

Maxillo-facial tumors

We have read with great interest two recent articles in the Journal, these being the opinions of Dr. G.V. Packota and Dr. D.A. Kolbinson in "Patient selection criteria for dental radiotherapy" Vol. 55(8):643-644 and "The Unerupted or impacted third molar" by Dr. R.G. Stevens and others. We believe that both articles do not take into consideration the many patients who develop malignancy every year. Since Dr. Stephens' article was published we have had three patients with acute leukemia who developed — after the onset of leukemia — severe pericorinitis as a consequence of their disease and their anti-leukemic treatment. Two of these patients anti-tumor treatment regimens had to be altered and a third developed serious complications following treatments. All of this could have been avoided if they had had routine extraction of these teeth.

In reading Dr's Packota and Kolbinson's article we can't help but think of the countless number of our patients whose maxillo-facial tumors would have been picked up on routine series of films. Granted, we restrict our practice to patients with diagnosed malignancy but just how do we figure these patients into the risk/benefit ratio for the general population? The serious risks of third molar surgery and excess radiation seem terribly small when life-threatening diseases are considered. We must realize that about one third of us will develop a malignancy if we live long enough.

If dentists are extracting third-molar teeth unnecessarily and over-exposing patients then consideration should be given to lifting their license. We must trust our fellow practitioners to exercise common sense. Restrictive philosophies expressed in the two aforementioned articles should, in our opinion, be taken with a grain of salt. From **our perspective**, third molar teeth are totally unwanted and any reasonable test which will pick a maxillo-facial malignancy at an earlier date is desirable.

W.G. Maxymiw, DDS, Head —
Department of Dentistry
R.E. Wood, Consultant —
Department of Dentistry
Ontario Cancer Institute incorporating
Princess Margaret Hospital
500 Sherbourne St., Toronto, Ontario

We should be concerned

I just opened my July issue of the Canadian Dental Association Journal and felt dismayed by what I saw on page 496. There are six photographs of participants at the CDA Government Relations annual dinner and reception and every picture shows at least one person holding a drink. Now, it may be that they are all drinking soda pop but it is not the impression that I get. I ask that you take a close look at those pictures and consider the image portrayed and the statement made about alcohol use. I am not suggesting that any of the individuals shown have an alcohol problem nor that alcohol is evil. However, it does trouble me to see how important alcohol apparently is at these functions.

We have an extremely serious and widespread alcohol problem in our society. One factor that contributes in large measure to this problem is the prevailing attitude that almost makes drinking alcohol a required social behaviour. That attitude is certainly reinforced by the photographs on page 496. That concerns me and I hope it concerns our profession.

Are dentists and bodies representative of our profession concerned about the problem of alcoholism and alcohol abuse in our society and within our profession? We should be! Do we want to make a difference? We can! One positive step would be to stop printing photographs of individuals with cocktail glasses in their hands. Let us work toward fostering the attitude that business can be carried out without the 'social lubricant' — alcohol. I will even suggest that business meetings and other functions be held without alcohol being available. That would be a powerful statement of our concern regarding the alcohol problem and our desire to do something about it.

Alcohol is a drug. It is at the root of what may be our most serious public health problem. A tough stand needs to be taken. Are we willing to take it? I sincerely hope so.

M.L. (Chris) Christianson, DMD
Vancouver, B.C.

Gentle 'sorcerer' chides the Journal

I heard my grandfather sigh today. He has been gone from this life for some

20 years but he still stops by now and then to show that he cares. Grandfather's name was Bedell, from whence came Paul B. Robertson, and I have always used the middle initial to honour him.

While a kind and caring sorcerer, my grandfather could be cantankerous, though in his latter years he generally refrained from transmuting into frogs those who offended him. I have mentioned that your Book Review in the Journal was well written, thoughtful, and generally complimentary. Moreover, I stressed that you did not purposely substitute an R for the B in my middle name. I think he understood but you might practice nibbling on a few flies just in case!

Paul B. Robertson
Dean: Faculty of Dentistry,
University of British Columbia

Editor's Note: Re: the book review "Perspectives on Oral Manifestations of AIDS — Diagnosis and Management of HIV-Associated Infections" Edited by P.B. (not "R") Robertson and J.S. Greenspan. Journal Vol. 55, No. 8, Pages 607-8, August, 1989.

'Excellent' CFDE coverage in JCDA

As Chairman and on behalf of the Canadian Fund for Dental Education, I'd like to thank you for the excellent coverage that the CFDE was given in the April edition of the Canadian Dental Association Journal.

The CFDE has had difficulty in the past getting across to the Canadian dental profession that the CFDE is a viable and worthwhile organization working for dentistry in Canada.

Your assistance in "Advertising" the Fund is greatly appreciated.

Dr. T.E.M. Ramage
Chairman, CFDE

Did you know?

Dr. Max Feldman put a patient under anaesthesia for a bit of tricky bridgework the other day whereupon she promptly grabbed his testicles.

The grip was so fierce that Dr. F. had to break one of the woman's fingers in an attempt to free his private parts. She sued Dr. F. for \$500. And won!

(New Zealand Dental Association Newsletter, August 89)



Take One Day Off For Your Security

Too often we put off doing the things we know we should do because we "don't have time". We think it will be worth your while to make time.

Take one day and block it off your calendar. Take that day just for yourself, your family and your practice. Devote that day to evaluating your current insurance coverage and bringing it up to date. Then you will have the security of knowing that your family will be looked after if anything should happen to you, that your livelihood will be protected if your dental office is damaged by fire or flood and that your savings will not be at risk if you should be hit with a large lawsuit. Think about it. Think of the peace of mind. Do it! It's only one day, but it could make all the difference to your future.

P.S. When you sit down to evaluate your insurance, call us if we can help you. That's what CDSPI is here for.



For further information call CDSPI toll free, and a Personal Service Representative will be pleased to assist you.

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This material has been approved by our consultants/brokers and insurers.



WE'RE NOT THE FIRST TO HAVE FACED A WAVE OF PROFESSIONAL SCEPTICISM.

"Foolish and philosophically absurd," his outraged detractors cried. Some four hundred years ago, Galileo was hauled over the coals and charged with heresy for challenging the fashionable ideas of the time. His crime was in promoting the ridiculous theory that the earth moved while the sun remained stationary. ¶ Flying in the face of conventional wisdom requires a resoluteness of purpose and a pretty thick skin. And nobody knows that better than the makers of Listerine. ¶ Listerine continues to encounter its fair share of raised eyebrows among the traditionalists of the dental community. After all, there is still resistance to the notion that an oral rinse can play a significant role in supragingival plaque and gingivitis reduction. ¶ But if there are those among you who are still taking a cautious wait-and-see attitude, perhaps you should know that the American Dental Association doesn't share your scepticism. ¶ In fact, Listerine is the only over-the-counter rinse to have satisfied the ADA guidelines and to have received its Council on Dental Therapeutics' seal of acceptance. ¶ Clinical studies conclusively show that as an adjunct to your professional care, and your patients' daily oral hygiene, Listerine will further reduce plaque by as much as 34%^{1,2,3,4}. ¶ The scientific explanation is a simple one. Because Listerine is a broad spectrum bactericidal rinse: it destroys the major oral microorganisms found in dental plaque. ¶ There are no substitutes for brushing, flossing and regular dental visits. However, Listerine can offer your patients who need extra help an easy and effective way to further reduce plaque and gingivitis. ¶ Now, do we still hear the purists tut-tutting?

ACCEPTED BY THE ADA TO HELP
PREVENT AND REDUCE SUPRAGINGIVAL
PLAQUE AND GINGIVITIS.



A FEW CLINICAL FACTS ON LISTERINE FOR DIE-HARD SCEPTICS.



Listerine is the only non-RX antimicrobial rinse accepted by the ADA to help control supragingival plaque and gingivitis, based on long term clinical studies following the ADA Guidelines (Council on Dental Therapeutics):

J.A.D.A. 112:528, 1986.

1. Studies were randomized, double-blind, parallel group design.
2. Study populations were representative of patients who use the product.
3. Both sexes participated.
4. Frequency and duration of product use were representative of actual use label directions.
5. Product was compared to placebo control.
6. Studies were at least six months in duration.
7. Product was tested in at least two studies by different independent investigators.
8. The same examiner was used with the same subjects for each index and procedure throughout each study.
9. Supragingival plaque was scored by an acceptable plaque index (the Turesky modification of the Quigley-Hein Index).
10. Studies used an acceptable gingival index which met the guideline criteria (Modified Gingival Index).
11. Evaluations were conducted at baseline, three months, and six months.
12. Extrinsic tooth stain and soft tissue condition were evaluated at

baseline, three months and at end of study.

13. Effects on supragingival plaque microbial composition were measured in two separate six-month microbiological studies by two different, independent investigators.

In conjunction with normal oral hygiene and regular professional care, Listerine:

A. Helps prevent supragingival plaque and gingivitis.

DePaola L.G., et al. "Chemotherapeutic inhibition of supragingival dental plaque and gingivitis development". J. DENT. RES. 16:311-315, 1989.

In this six-month, double-blind study, twice-daily use of Listerine Antiseptic with regular oral hygiene following professional prophylaxis inhibited the development of both supragingival plaque and gingivitis by 34% compared to the hydroalcoholic control.

	Listerine	Control
Plaque Index	1.15	1.75
Gingival Index	0.92	1.39

B. Reduces existing supragingival plaque and gingivitis.

Lamster J.B., et al. "The effect of Listerine Antiseptic on reduction of existing plaque and gingivitis". CLIN. PREV. DENT. 5:12-16, 1983.

This six-month, double-blind study demonstrated the efficacy of twice-daily use of Listerine in reducing plaque and gingivitis. Scores measured a 20.8% reduc-

tion in supragingival plaque and 27.7% reduction in gingivitis in the Listerine group - a significant improvement over normal oral hygiene alone for the Listerine group versus the vehicle control.

	Listerine	Control
Plaque Index	1.93	2.44
Gingival Index	1.20	1.66

Listerine destroys major oral presumptive pathogens within 30 seconds.

Minah G., et al. "Effect of six month use of an antiseptic mouthrinse on supragingival dental plaque microflora". J. CLIN. PERJO. 16:347-352, 1989.

Goldner S.B. Rubin M., Brogdon C. "Antimicrobial activity of O.T.C. mouthwashes". Data on file, 1986.

Plaque Microorganisms Susceptible to Listerine Antiseptic*	
Gram-Positive Facultative Cocci	Streptococcus sanguis Streptococcus mutans Streptococcus salivarius
Gram-Positive Facultative Rods	Lactobacillus acidophilus
Gram-Positive Anaerobic Rods	Actinomyces viscosus
Gram-Negative Anaerobic Rods	Bacteroides intermedius Fusobacterium nucleatum Leptotrichia buccalis

Yeasts	Candida albicans
*in vitro testing	

With regular, long term usage Listerine:

Does not cause extrinsic tooth stain.

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Does not alter the balance of normal oral flora.

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*Caution: Do not give to children under 6. Contains: Alcohol 21.90% w/v, Eucalyptol 0.091% w/v, Thymol 0.063% w/v, Menthol 0.042% w/v. "Listerine has been shown to help prevent and reduce supragingival plaque accumulation and gingivitis when used in a conscientiously applied program of oral hygiene and regular professional care. Its effect on periodontitis has not been determined". COUNCIL ON DENTAL THERAPEUTICS AMERICAN DENTAL ASSOCIATION. For more information on Listerine clinical studies or prescribing details call 1-800-668-1503.

ACCEPTED BY THE ADA TO HELP PREVENT AND REDUCE SUPRAGINGIVAL PLAQUE AND GINGIVITIS.

ORAL SURGERY

Gordon W. Pederson

W.B. Saunders, 1988
(\$50.50)

The author has written a textbook directed towards the undergraduate student and general dentist that promises to be a valuable, frequently used resource.

The book in soft-cover is printed on good paper with clear accurate reproduction of illustrations and photographs that appropriately highlight the text. The textbook is well organized, encouraging the student to develop an organized approach to Oral Surgery as well as allowing for easy reference and review by the more experienced clinician. Each chapter is introduced by an outline that consists of its major headings and subtitles. Extensive use of "focal point boxes" help to summarize relevant terminology, significant diagnostic and management techniques, technical advances and background information.

Chapter 1, Asepsis for Oral Surgery, offers a timely review of the dangers associated with cross-contamination in the dental office. Pertinent pathophysiology as well as steps that can be taken to protect patients and staff are covered. In a subsequent chapter particular consideration has been given to the preoperative evaluation of the surgical patient and its role in identifying conditions that will require modification of treatment. Compromising conditions including coagulopathies and those affecting the cardiovascular, pulmonary, neurologic and endocrine systems are reviewed and suggested management protocols are established.

The sections on instrumentation, simple extractions, surgical removal of teeth, and complications of tooth removal are detailed and easy to read. The diagrams and photographs are exceptionally helpful in clarifying the techniques discussed. This reviewer is concerned that a push-pry or Class I lever force for application of the dental elevator is advocated by the author with only limited caution expressed. This technique in the hands of an inexperienced operator can generate very dangerous forces resulting in fracture of the jaw.

The chapters on preprosthetic surgery, management of oral pathology, orofacial infection, salivary gland disorders and orofacial trauma are informative and help

the reader identify the responsibility of the general dentist as well as the role of the specialist. An excellent review of the diagnosis and treatment of temporomandibular joint disorders and dentofacial deformities is provided including recent technical advances.

Dr. Pederson should be congratulated on providing a comprehensive, concise, and affordable Oral Surgery textbook that can be used by the student or general dentist.

This book was reviewed by:
Dr. M. Aidelbaum
Assistant Professor
Oral and Maxillofacial Surgery,
University of Alberta

ESSENTIALS OF SAFE DENTISTRY FOR THE MEDICALLY COMPROMISED PATIENT

F.W. McCarthy

*W.B. Saunders Co.,
Harcourt Brace Jovanovich Inc.
Philadelphia, PA,
1st Edition, 281 pages.*

This first edition, soft-cover book is dedicated "to the new breed — the dentist capable of providing safe, comprehensive health care for all patients". This book is written from a "human perspective" with a true sense of reality. The book clearly stresses a basic Recognition, Assessment, Safe Management and Emergency (the "RAM-E") approach for the wide variety of patients who may present for dental treatment. It is clearly stated that this book is not a comprehensive text about internal medicine and physical diagnosis. With this, I fully agree! Only the essentials are discussed. I feel, however, that there are some general omissions and inaccuracies in the actual presentation. While the presentation is often in an almost conversational tone, I frequently found it to be somewhat repetitive and all too often spiced with legal implications. The latter is, I guess, a sign of the times! As well, the use of pneumonics — which would undoubtedly be of aid to the neophyte dental student — was to this reviewer, at least, somewhat annoying.

This book contains a Foreword written by Dr. Norman Trieger, a Preface and an introductory section entitled "The Second

Golden Age of Dentistry". These initial sections set the tone for the body of the book. The twenty chapters which follow are logically presented. The initial five chapters on physical examination, evaluation, and function tests then progress to chapters on systems review (review of the various organs systems). There are then concluding chapters which discuss emergency procedures, hospital dentistry, and finally, legal considerations.

Each chapter is followed by review questions which are actually presented at the end of the book in a section entitled "Review Units". The answers to these questions are usually clearly covered within the twenty chapters comprising the body of the text.

This book is not directly referenced throughout, although a rather comprehensive four-page bibliography is presented. This is followed by a useful seven-page Index.

This book emphasizes a working knowledge of clinical medicine, physiology and patient evaluation, all of which should be based on firm scientific principles. This will then permit the dentist or dental student to recognize the medically compromised patient and to take the precautions for safe treatment that are outlined in this text.

Despite the previously mentioned nuances expressed above, this book would make a valuable addition to the library of any dental student or general dental practitioner. Its easy reading, logical and progressive approach to the basics of the subject matter is a clear advantage to the dental student or dentist in practice. It would be of particular advantage to the dental intern engaged in hospital dentistry, where medically compromised patients are frequently encountered.

This book was reviewed by:
Earle, R. Young, BSc, DDS, BScD, MSc,
FADSA,
Assistant Professor, Anaesthesia,
Faculty of Dentistry,
University of Toronto.

RESTORATIVE DENTAL MATERIALS

Craig, Robert G., Editor

8th ed., Mosby Co., St. Louis, 1989

This is the eighth edition of Craig's "Restorative Dental Materials" textbook.

The textbook is designed for undergraduate dental students.

The book has established its place as one of two most popular texts for undergraduate courses in dental materials science, since its first edition in 1960. The book is regularly updated and upgraded with a new edition approximately every four years. Such frequent updating is necessary in the fast advancing field of restorative dental materials.

This edition features three major changes, the chapter on biocompatibility has been rewritten. The chapter on esthetic materials and posterior resins has been expanded and has had major updating. One change in format has been the addition, at the end of each chapter, of certain problems and possible causing factors or solutions. Less dramatic but significant updating has been made in the areas of impression materials, ceramic systems and polymers.

The chapter on biocompatibility (Chapter 7) contains sections on reaction of oral tissues to injury, tests for biocompatibility of restorative materials prior to introduction for clinical use. This is followed by a detailed section on the biocompatibility of various dental materials such as reaction of the pulp, oral soft issues and bone to cements, liners, alloys, carbons and polymers.

Although bonding and etching references are identified separately in the reference at the end of this chapter, the text did not reflect the current emphasis on, and importance of such a timely topic. The pulp reaction to dentine adhesive materials, and the use of acidic solutions and gels over exposed dentin could have received more attention. It is also noticed that the most recent chapter references on bonding and etching are dated 1978, while most of the body of knowledge in this area occurred in the latter part of this decade. The issues of mercury and visible light hazards, although they are dealt with in the corresponding chapters, could find an appropriate place in this chapter.

The chapter on direct esthetic restorative materials (Chapter 10) has been updated and expanded, to include a variety of restorative materials that came into use in the last few years. The bonding to tooth tissues, enamel and dentine have been dealt with in adequate detail and include the most recent advances in adhesion to dentine, supported by literature as recent as 1987. The section on extended applications for composite resins as direct

and indirect anterior veneers and the porcelain veneers and restorations that are resin bonded to etched enamel are valuable and timely additions to this chapter.

The classification of composite resins based upon filler size is rather unclear, especially Type II systems. The supporting table (Table 10-1) could be more illustrative if it included percentages of organic fillers as indicated in the text. The section on packaging of composites still contains the powder and liquid system composites, despite the fact that they are no longer available on the market for almost a decade.

The increased use of glass ionomer recently in combination with both anterior and posterior resins, warrants

more elaboration on their properties and handling. The same could be said for posterior resins as direct and indirect restorative materials.

The textbook, despite some weaknesses in updated information, remains an outstanding book in the science of dental materials, and in the library of the undergraduate dental student. It might be difficult at times, when dealing with the fast advancing field of dental restorative materials, and changing clinical techniques, to produce a textbook that is very current and at the same time, avoid controversies and uncertainties.

*This book was reviewed by:
Amazis N. Louka, DDS, HDD, MSc,
University of Manitoba*

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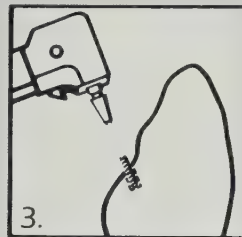
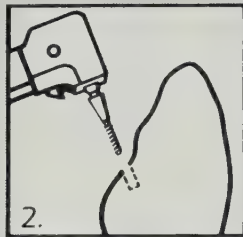
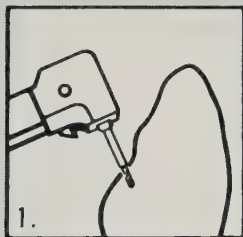
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Les maladies des glandes salivaires

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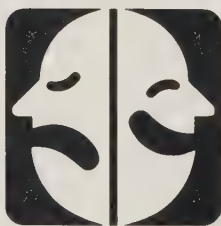
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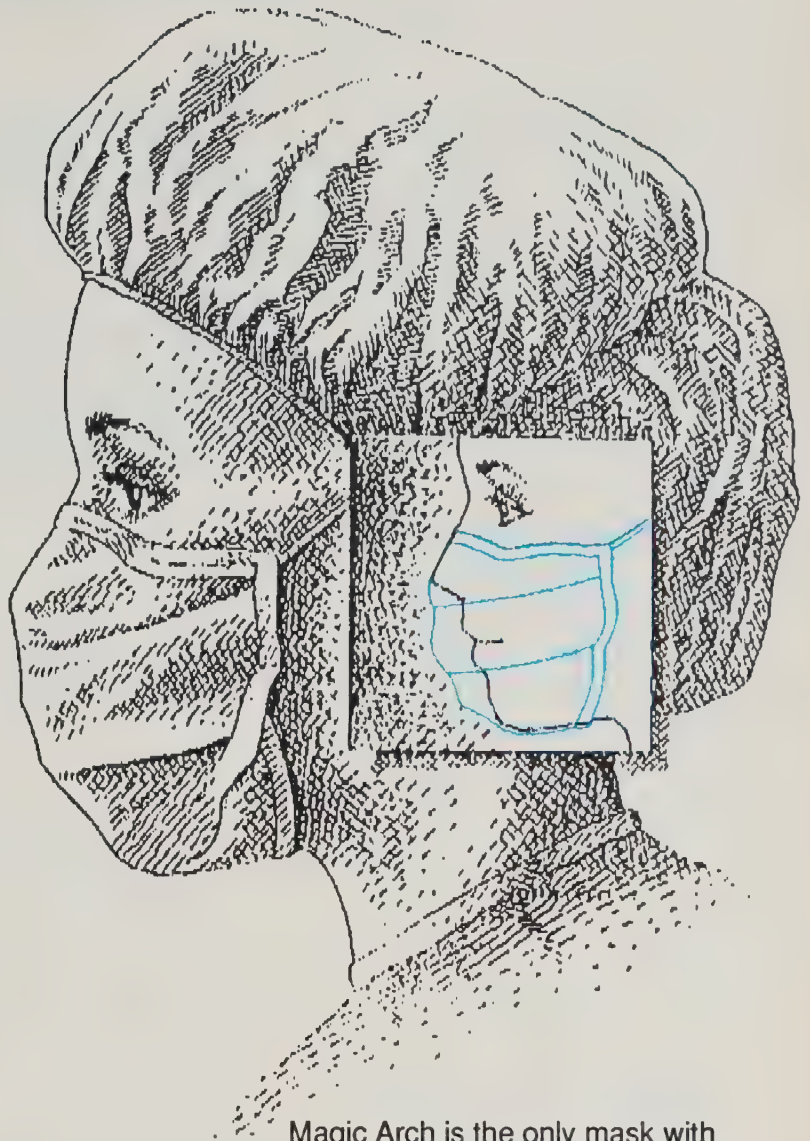
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*Clinical Research Associates, March 1989. Study and samples on request

If you don't believe the would you believe

I earn my living writing advertising. And as I happily prepared to write this ad with a litany of cute expressions, catch phrases and the odd pun or two, you can imagine my horror when I was handed an oppressive stack of research results regarding the benefits of oral irrigation using a Water Pik Dental System.

Frankly, it's not something everyone wants to read about, let alone write about. Gingivitis. Pockets. Subgingival access. But if anyone understands the importance of these things, you do. And far better than I.

So, I had no alternative but to use this research. Now, I've done my best to make this material readable but I'm not making any promises. Yet as much as I hate to admit it, these findings seem to be far more compelling than any ad I could write.

The purpose of this comprehensive study was to demonstrate the benefit of Water Pik Oral Irrigation on gingival health by measuring effects on clinical parameters and marginal and subgingival microflora.

Treatment groups, adjunctive to normal oral hygiene were compared over six (6) months:

- Group I daily irrigation with 300 mL water, then 200 mL 0.06% Chlorhexidine
- Group II daily irrigation with 500 mL of water
- Group III twice-daily rinse with 0.12% CHX (positive control)
- Group IV toothbrush (negative control)

Patients were randomly assigned and balanced by age and gender.

Enhancement of Gingival Health by Oral Irrigation with Chlorhexidine.

3-MONTH RESULTS

M.G. Newman, T. Flemmig, F. Doherty, et al. (UCLA School of Dentistry)

Study Summary: A double-blind study of 187 patients assessed the improvement of gingival health and reduction in disease-associated bacteria by oral irrigation. (Water Pik).

At 3 months compared to negative control, the group 1) irrigating with 0.06% CHX had statistically significant ($P \leq 0.01$) reductions in GI (46.3%), GI Bleeding (53.7%), BOP (39.8%), plaque (50.9%) and pocket depth (5.5%). Water irrigation alone significantly reduced GI (30.0%), GI Bleeding (44.9%) and BOP (24.6%) but did not significantly reduce plaque (2.4%) or pocket depth (0.5%). Compared to positive rinse control, irrigation with 0.06% CHX was significantly better for GI (60.0%), GI Bleeding (88%), BOP (221%) and pocket depth, and also better for plaque and GI than water alone. CHX rinse was effective relative to negative control. Groups using CH had significant reduction in "Actinomyces"; CHX irrigation group had significant reductions in Gram negative facultative rods. Presented 1988 IADR Continental European Division. Louven, Belgium.

Results:

I. Despite minimal effect on supragingival plaque, water irrigation benefits are significant (compared to normal oral hygiene):

• Reduction in gingival inflammation (-30.0%)

• Reduction in gingival bleeding (-44.9%)

• Reduction in Bleeding on Probing (-24.6%)

2. Irrigation delivery enhances the chemical effect of chlorhexidine over rinsing with it:

- Irrigating once per day with water then 0.06% chlorhexidine markedly enhanced improvement in gingival health.
- Irrigation with dilute chlorhexidine significantly reduced Actinomyces bacteria associated with gingivitis.

Chlorhexidine and Irrigation in Gingivitis: 6 months Correlative Clinical and Microbiological Findings.

6-MONTH RESULTS

T.F. Flemmig, M.G. Newman, S. Nachnani, et al. (UCLA, Los Angeles)

Study Summary: The objective was to evaluate the effect of irrigation with water or chlorhexidine (CHX) on gingival health and plaque microflora of 175 patients with naturally-occurring gingivitis. In this positive-negative controlled, examiner-blind study, 165 marginal/subgingival plaque samples were taken from 88 of the patients completing the 6 month trial. Microbiological analyses were performed using selective and non-selective culture methods.

Results: At 6 months, daily

advertising for Water Pik,[®] the research?

irrigation with water then 0.06% CHX (Group I) significantly reduced mean gingival inflammation by 42.5%, Bleeding on Probing by 35.4% and the total Colony-Forming Units of Gram negative anaerobic rods ($P \leq 0.02$) compared to toothbrush control. With 0.12% CHX rinse, mean gingival inflammation was reduced 24.1% and BOP by 15.0%. For both CHX irrigation and rinse groups, the Calculus Index was significantly increased while plaque was significantly reduced.

Daily water irrigation significantly reduced mean gingival inflammation by 23.1% and BOP by 24.0% at 6 months. There was no increase in supragingival plaque compared to Group IV.

In the small percentage of sites initially $>4\text{mm}$, GI was significantly reduced only by water irrigation (55.2%) and BOP only by CHX irrigation (38.2%) when compared to toothbrush control.

In the following tables, for sites with initial pocket probing depth $\leq 4\text{mm}$, GI and BOP were significantly reduced by all treatment groups; Group I irrigation was most effective in reducing BOP. ($P \leq 0.05$)

6 MONTH REDUCTION BLEEDING ON PROBING		
Adjunctive to toothbrushing		
Group I	CHX Irrigation	36.6%
Group II	Water Irrigation	26.0%
Group III	CHX Rinse	15.9%
Group IV	Toothbrush Control Comparison	

*Presented 3/18/89 AADR.
San Francisco.*

Effects of 6 Month 0.06% Chlorhexidine Gluconate Irrigation on Plaque Microflora

6-MONTH RESULTS

*S. Nachnani, M. Newman, T. Flemmig,
et al. (UCLA School of Dentistry,
Los Angeles)*

Study Summary: This study documents the bacteriologic effects on marginal and subgingival plaque in gingivitis patients who participated in a 6-month, positive/negative controlled, examiner-blind study. Curette plaque samples from sites in each of the four test groups were characterized using selective and non-selective culturing methods.

Results: At baseline, all patients harboured plaque microflora typical of naturally-occurring gingivitis. Only at 3 months were *Actinomyces* significantly reduced by CHX irrigation and rinse; at 6 months no significant differences were apparent, but the numbers of Colony-Forming Units were reduced for both CHX rinse and irrigations groups.

All treatment groups reduced CFU and proportions of black pigmented *Bacteroides* at 6 months.

Furthermore, CFU and percent of Gram negative anaerobic rods were significantly reduced at 6 months by irrigation with CHX.

At 6 months, the CFU of streptococci were similar for all four Groups.

*Presented 3/19/89 AADR.
San Francisco.*

Naturally, we think you should recommend the Water Pik Dental System to your patients. After all, the research shows the Water Pik Dental System to be effective in the enhancement of gingival health. Now we just have to see about the advertising.

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6 MONTH REDUCTION GINGIVAL INDEX		
Adjunctive to toothbrushing		
Group I	CHX Irrigation	48.0%
Group II	Water Irrigation	38.0%
Group III	CHX Rinse	28.7%
Group IV	Toothbrush Control Comparison	





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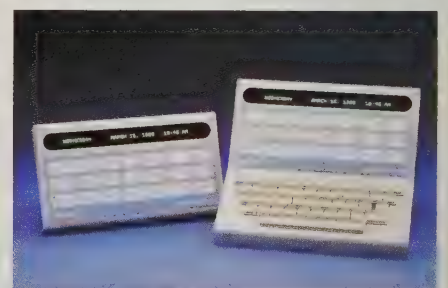
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The New CDA Uniform System of Codes and List of Services Part II — What's New?

P. Ralph Crawford, BA, DMD

In the last issue of the Journal "The Beginnings" of Insurance plans were traced with emphasis on the historical background of procedure codes, nomenclature, numbering, relative value units, etc. . . The Canadian Dental Association was at the leading edge in the development of those first workable third party dental payment systems.

In the 1960s a CDA Committee chaired by Dr. Robert Clappison of Toronto developed the basis for insurance plan reporting which, apart from minor alterations from year to year, remained intact for 25 years. It took the computer to initiate major revision.

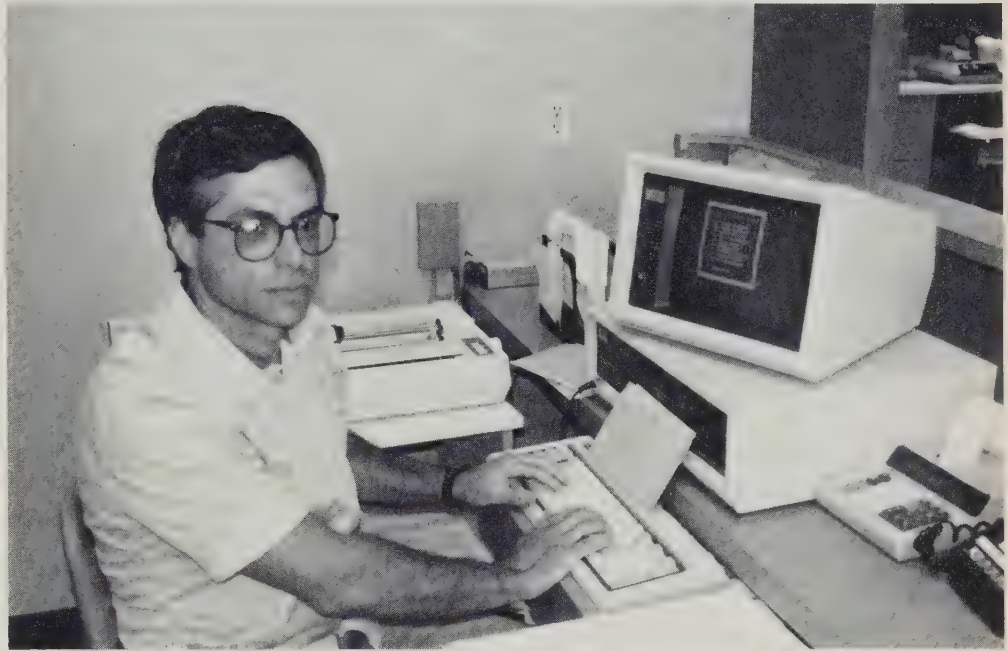
In 1982 two dental partners in Winnipeg, Dr. Donald Gutkin and Dr. Ben Goldberg, recognized (as did many other dentists), the inherent problems of adapting electronic technology to standard dental claim forms. The difference was that Drs. Gutkin and Goldberg did something about it. They began a letter campaign.

Over a period of 18 months, starting in the fall of 1982, they wrote dozens of letters: to their own Manitoba Dental Association, to the Canadian Dental Association and to 36 insurance carriers and companies. The letters carried a basic message,

"We are writing to alert associations of the inherent problems involved with the utilization of 'computerized' claim forms"

and then in meticulous detail they described not only the anticipated problems but possible solutions.

There is always a danger in speaking out against a system or suggesting innovation. When a new committee is eventually created the vocal party is assured recruitment as a member. Dr. Don Gutkin was invited to join Drs. Don MacFarlane (chairman), Toby Gushue and William Leggett on the new (1984) CDA Third Party Dental Plans Committee. Almost



Dr. Donald Gutkin, in Winnipeg. His contribution has been described as "a labor of love".

immediately, with full support from the Committee, Dr. Gutkin set about to revise the Uniform System of Codes and List of Services.

The letter writing began anew. Ten CDA corporate bodies, the Canadian Life and Health Insurance Association, insurance carriers and dental insurance consultants were contacted. Considering there are over 20 million dental claims a year in Canada it was imperative to achieve a system that would work efficiently. Again, the over-riding message was, "How do you adapt and accommodate the computer to both dental office and insurance company?"

The letters initiated tremendous response and numerous suggestions for code and procedure changes. So many in fact that Dr. Gutkin decided to scrap all revisions and start the entire process from the beginning.

Working single handedly, Dr. Gutkin had a first draft ready in about four

months. The draft(s) went back and forth between all interested parties for more than two years. Like Dr. Clappison and his committee members a quarter of a century before, Dr. Gutkin's efforts had to be a labour of love. It certainly wasn't for money! In one month alone Dr. Gutkin reported he had worked the equivalent of 14 days outside of his office on behalf of the Third Party Dental Plans Committee — all without per diems.

Despite frustrations, (too many staff changes at CDA headquarters didn't help at all), Dr. Gutkin finally witnessed the adoption of the New Uniform System of Codes and List of Services at the 1988 Interim meeting of the CDA Board of Governors.

As there are some very fundamental changes in the Codes and Services, the Journal asked Dr. Gutkin, "What's New?"

1. The 5 digit Codes are more detailed and descriptive and are placed in a

logical sequence under headings that are easy to find. Included will be an Alphabetical Index for ready reference.

A Conversion Chart will simplify the "change-over" between 1989 and 1990. This is particularly important in the early stages until everyone becomes familiar with the new system.

2. Codes ending with the number "0" will represent a category, classification, sub-classification or service titles:

01000-09999 Diagnostic
10000-19999 Preventive
20000-29999 Restorative
30000-39999 Endodontics
40000-49999 Periodontics
50000-59999 Prosth-Removable
60000-69999 Prosth-Fixed
70000-79999 Oral Surgery
80000-89999 Orthodontics
90000-99999 Adjunct

Example: 22121

- "2" 1221 Represents the Category "Restorative"
- 2 "1" 221 Represents the Classification "Amalgam Restorations"

- 21 "2" 21 Represents the Sub-Classification "Amalgams Permanent Dentition"
- 212 "2" 1 Represents the Service Title "Permanent Molars"
- 2122 "1" Represents the Specific Service "Permanent Molars One Surface"

3. Units of time and procedures performed have been incorporated into the code itself. It is no longer necessary to repeat the same code number to indicate several units or procedures.

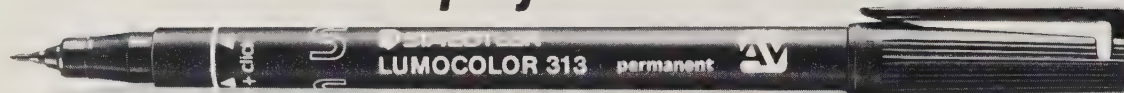
Example: 43410 is the new code for periodontal scaling. 43411 represents one unit of time; 43312 two units of time, etc. . .

4. Each arch description is designated with a specific number, either full mouth, maxillary or mandibular arches; sextants or quadrants. There are 13 descriptive numbers.

Example: a gingivectomy from tooth 13-23 would be code # 42311 and the sextant would be "04".

5. All laboratory procedures will be described with "+L." where 99111 is a commercial lab; 99333 is an in-office lab procedure and 99555 is a non-lab expense incurred and designated with "+E" (an "extra" out-pocket expense such as an implant).
6. "Tooth Colored" now describes a restorative technique and accommodates composite restorations and veneer applications.
7. A major change is from the G.V. Black Classifications I, II, III, IV, V, to a "surface" classification.
Example: a three surface restoration could be an MIL, MIV, or DIL, DIV but not extending beyond the remaining line angle, other than retention.
Also Note: "V" vestibular replaces the traditional B=Buccal and L=Labial.
8. The fixed prosthetic section accommodates the new implant prosthetics and the associated procedures. The surgical implant procedures are found in the surgery section under "79900 Implantology." Δ

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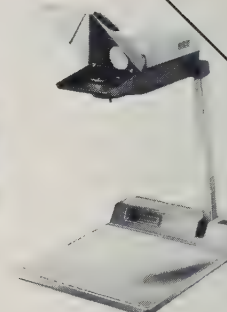
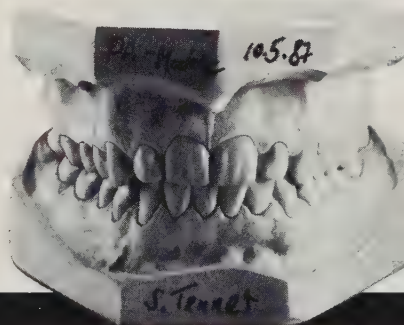


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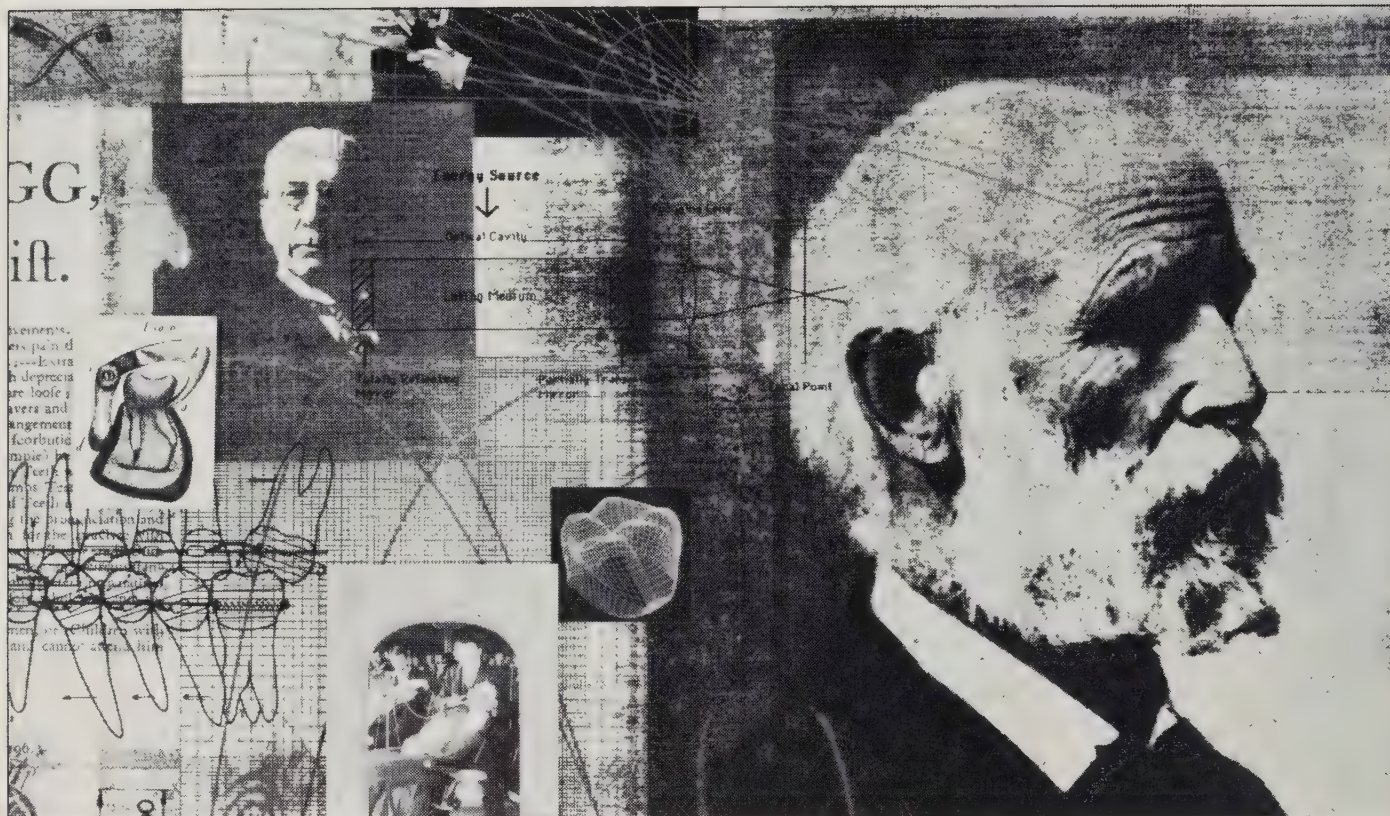


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Dr. W. Michael Wainright

Vancouver orthodontist delivers 1989 Grieve Memorial Lecture

W. Michael Wainwright, BDS, DDS, MSD, FRCD(C), who conducts a specialty practice in Vancouver, presented the 1989 George W. Grieve Memorial Lecture on Monday, August 28, to a capacity audience during the annual CDA Convention in Vancouver.

His presentation was entitled "Orthodontics Through the Ages: From Six to Sixty".

Dr. Wainright kindly made available to this Journal a synopsis of his presentation, particularly for the benefit of those who were unable to attend the event.



Dr. Jack Niedermayer, as President of the Canadian Dental Association, presents a plaque to Dr. Wainwright, left, in appreciation of his presentation of the Grieve Memorial Lecture during the CDA National Convention in Vancouver.

Synopsis "Orthodontics Through the Ages: From Six to Sixty"

All too often an orthodontist is faced with a patient who has been referred and has been "under observation" for several years. "If only . . ." some earlier interceptive treatment could have been done then the active treatment could have been simpler, quicker, and more stable. This presentation was given with two objectives, the first being an update of current orthodontic concepts and the second to present these concepts at an optimal treatment age.

AGE 6. Functional slides should be eliminated with either limited tooth movement or occlusal adjustment of the primary dentition. Potential crowding problems can be intercepted with discing or removal of primary canines. Lateral symmetry and antero-posterior inter-arch relationships need to be heeded in the treatment decision. Counselling of habits

is often needed and a practitioner's own philosophy of dealing with various types of digit and tongue habits needs to be developed.

AGE 8. This is an ideal age to do *maxillary expansion*, particularly using a fixed R.M.E. device. The maxillary first molars have erupted sufficiently, the maxillary first primary molars still have sufficient root to act as good anchors, and the eight-year-old patient is usually most cooperative. If *Class III growth patterns* can be recognized at this age and diagnosed as a constricted and retrognathic maxilla, some very valuable interceptive treatment can be done which may eliminate or reduce the need for surgery at a later stage. The *treatment phases for Class III cases* are suggested as:

1. Early treatment at approximately eight years of age to expand (using a

fixed R.M.E. device) and protract (using a protraction headgear) the maxilla. Over-treatment (expansion and protraction) is recommended especially in the more severe cases to counter the expected unfavourable growth pattern in later years. Over-expansion in R.M.E. cases also assists in gaining more favourable facio-lingual axial inclinations of teeth when the crowns later tip palatally. Skeletal protraction of the maxilla is possible and was shown with protraction headgear. The protraction is possibly aided with a "loosening" of the maxillary sutures achieved with the R.M.E. device.

2. Early reassessment and limited treatment to optimize esthetics during the early teen-age years.
3. Later reassessment and monitoring of the growth pattern with serial lateral

cephalometric radiographs and superimposition tracings.

4. Definitive treatment plan when growth appears to be stabilized at approximately 18 years of age or even later. In cases exhibiting asymmetric mandibular growth, a bone scan may be considered to help confirm the treatment timing decision.

AGE 9½. This is the optimal age for initiating Phase 1 treatment in *Class II* cases. Patient cooperation is usually much better than in early adolescence and there is considerable skeletal growth even though peak growth velocity (age 12-14) has not yet occurred. Class II treatment options are:

1. Functional appliance as the first of a two phase treatment plan.
2. Headgear with or without an anterior bite plane incorporated into a maxillary removable appliance. This could be the first of a two phase treatment plan.
3. Tooth removal including serial extraction procedures. The teeth involved are usually premolars in various combinations. Occasionally second molars may be indicated.
4. Class II elastics.
5. Orthognathic surgery
6. Other — e.g. Herbst appliance.

Most *dental crowding* treatment decisions should be made at this stage with the options of tooth removal and allowing drifting of the erupting teeth as a continuation of a serial extraction procedure. Conversely space maintenance procedures may be necessary on a non-extraction treatment plan.

If *habits* and *open bite* problems persist at 9½ then some active appliance intervention is usually indicated. The "rake" type fixed habit appliance has proven to be effective and if used should be left in place for at least 12 months to ensure against relapse.

AGE 12-14. This is the traditional age that most fixed appliances are placed because this is when the permanent dentition erupts. Due to social and adolescent pressures, cooperation is often less than ideal, particularly with oral hygiene procedures and appliance cooperation. Treatment at this age is much more rewarding if the major problems have already been corrected as a first phase at an earlier age. The estimated timing of second molar eruption is important in deciding when to place fixed appliances if second molars are to be banded.

AGE 17-18. The age at which Class III treatment patterns can be definitively

planned. Most (but not all) Class III patterns are due to a retrognathic and constricted maxilla rather than a prognathic mandible. Conversely most Class II patterns are due to a retrognathic mandible.

Adult Treatment: The *esthetics of orthodontic appliances* has always been a concern to adult patients. Stainless steel bonded brackets have improved in design and decreased in size. They are still perhaps the appliance of choice in most cases. Plastic brackets have improved considerably but still suffer from staining problems. Ceramic brackets were introduced approximately three years ago and initially seemed promising due to increased hardness, strength and stain resistance. They are however more expensive and more recently problems have been recognized including bracket fracture with sharp glass-like edges, enamel fracture upon debracketing and occlusal contact and occlusal wear of opposing teeth. Lingual fixed appliances have proven to be unwieldy and impractical in most cases.

The successful use of *osseo-integrated implants* seems to be one of the greatest advances in modern dentistry. They are of great value in orthodontics in difficult, multidisciplinary cases and provide excellent anchorage in all three planes of space. Treatment planning of these cases must include all disciplines concerned, especially the prosthodontist responsible for the final restorative phase.

Unusual occlusal schemes in adult treatment including management of the mandibular anterior segment where significant Bolton tooth size discrepancies may exist. Removal of one, two or even three mandibular incisors with premolars substituting for canines are possible. In all cases a diagnostic tooth set-up (Kesling) is recommended so that there are no later treatment surprises!

Cosmetic bonding materials have improved dramatically and are a most useful adjunct to orthodontic treatment. This is especially true in the maxillary anterior segment with reshaping canines to resemble lateral incisors and disguising interproximal spacing due to variations of tooth shape.

Periodontics and orthodontics are becoming increasingly interdependent. Cases illustrating the esthetics of gingival contour were shown.

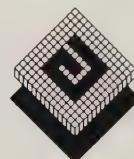
Orthognathic surgery is now an indispensable adjunct to orthodontic treatment. Rigid internal fixation is now preferred over non-rigid fixation techniques due to the advantages to the patient with minimal to no period of intermaxillary fixation (i.e. jaws wired together). Rigid fixation has also largely overcome the problems of post-operative skeletal relapse and has now even made closure of skeletal open bites possible with mandibular surgery. The techniques involved with rigid internal fixation are more exacting for surgeons than with non-rigid fixation. Δ

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MICHIGAN, 1988: Reduction in Plaque

Three groups of students chewed 10 pieces of gum each per day, sweetened with xylitol, sorbitol or a xylitol/sorbitol mixture respectively. Two weeks later, the xylitol and xylitol/sorbitol groups showed a decrease in plaque from baseline values; the sorbitol group showed an increase.

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1981-84

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THE MONTREAL
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The Story of Silver Amalgam (and how a Canadian changed it all!)

P. Ralph Crawford, BA, DMD

Dentistry has sought an ideal dental material for centuries. In fact, a thousand years before dentists in the West were experimenting with "silver paste" the Chinese had developed a silver amalgam. The amalgam is mentioned in the materia medica of Su Kung (AD 659), and Li Shihchen (1578) discusses how its formulation of 100 parts of mercury to 45 parts of silver and 900 parts of tin produced a paste said to be as solid as silver.¹

Undoubtedly the alchemists in the Middle Ages, seeking the secret of turning base metal into gold, experimented with the liquid metal mercury and created different formulations of it with silver. It took until about 1826 before M. Taveau of Paris began using what he called "silver paste" as a filling material.² This combination of silver filings from coins (which introduced traces of copper) and mercury proved to be quite unsatisfactory because of the expansion qualities of the end product. It did however have potential far and above the "fusible metals" which were hot, (212 degrees F.) alloys of bismuth, lead, tin and mercury and were poured into a tooth cavity. If there was no pity for the poor pulp just think of the agonies of the patient!

Gold remained the filling material of choice throughout the years of experimentation with silver and mercury. However, gold's intrinsic cost and its tedious handling properties made the noble metal available only to the rich. Although Dr. Robert A. Arthur in 1855 demonstrated the cohesiveness and handling of gold foil could be improved by passing it first over a spirit lamp (annealing),³ there was still an urgent need for a durable economic material.

The Amalgam Wars

The use of silver amalgam as a filling material was to take an unusual turn. In 1833 two French researchers, the



Pierre Fauchard
"Father of modern dentistry"

Crawcour brothers, arrived in New York. It was to be the beginning of "The Amalgam Wars".

The Crawcours had developed a very crude silver alloy made from silver coin shavings and mixed with enough mercury to make a sloppy amalgam. They called it Royal Mineral Succedaneum and proceeded to mount a blatant advertising program hitherto unheard in dental circles. Bremner recounts the "War".⁴

"Actually it (Crawcour's) was a poor amalgam alloy which the dentists generally condemned because they believed that the mercury was injurious to the patient. Under ordinary circumstances the profession would have ignored the charlatans, and time would have taken care of the nefarious activities; but so effective were their methods of publicity that even some leading dentists . . . felt the competition of the unsavory newcomers. To rid themselves of this threat to their economic welfare, the dentists adopted the only obvious plan; they attacked the amalgam as an unsatisfactory filling material on the ground that it was detrimental to public health. This proved so successful that the two Frenchmen were forced to leave."

World's First Dental Organization a Casualty

Apart from causing turmoil and rancour between individual dentists, the Amalgam War claimed a "group" casualty. The first dental organization in the world, the American Society of Dental Surgeons, founded in New York in 1840, became embroiled in the controversy when in 1843 it went on record declaring the use of amalgam to be malpractice. In fact the Society passed a resolution that each member must sign a pledge. . .⁵

"I hereby certify it to be my opinion and firm conviction that any amalgam whatever . . . is unfit for the plugging of teeth or fangs and I pledge myself never under any circumstances to make use of it in my practice, as a dental surgeon, and furthermore, as a member of the American Association of Dental Surgeons, I do subscribe and unite with them in this protest against the use of the same. Given under my hand and seal this . . . day of . . . 184"

Signed

Refusal to sign the pledge was to be followed by expulsion.

However, the leaders of the movement failed to reckon with the independent spirit of dentists. Whether agreeing with the amalgam or not, dentists resented the arbitrary actions of the Society leaders and mass resignations resulted. The Society never recovered and it was disbanded in 1856 for lack of a quorum.

War or no war, experimentation with amalgam continued, albeit sporadically. Thomas W. Evans of Paris in 1848 and Dr. Townsend of Philadelphia in 1855 produced various alloys but the unbalanced formulae created uncontrollable shrinkage/expansion problems. John and Charles Tomes of London in 1861, Kirby in 1871 and Thomas Hitchcock of New York in 1874 did scientific investigations but with few workable results.

New Departure Movement

In the 1870s Dr. J. Foster Flagg while experimenting somewhat inconclusively with amalgam did make a significant contribution. He founded the "New Departure" Movement which advocated the spurious reports of amalgam causing health injury were quite unfounded and no single filling material could serve equally well in all cases.

Dr. G.V. Black

The entire scene of dental amalgam (in fact dentistry as a science!) was to change with the genius of Dr. Greene Vardiman Black at Chicago's Northwestern University Dental School. As a pioneer in dental science, Dr. Black had to invent the machines, tools and instruments for his own experiments. Dentistry was to enter into a new age.

Black's 1895 publication in *Dental Cosmos*⁶ concluded that an alloy containing 72.5 per cent silver and 27.5 per cent tin, of which up to 5 per cent copper could replace an equivalent amount of silver, gave the best results when amalgamated with mercury. The publication displayed two of G.V. Black's outstanding characteristics; his professionalism and his genius.

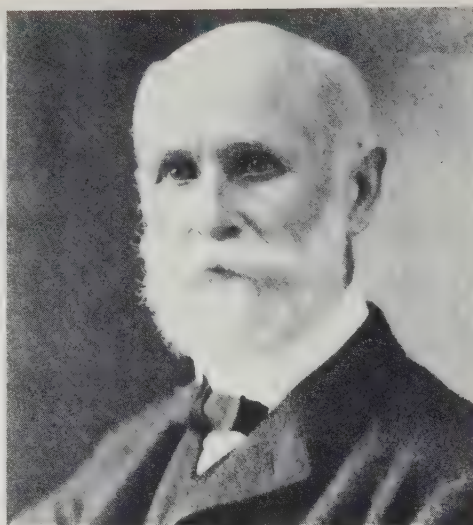
Pierre Fauchard in 1723 had placed dentistry on the road to professionalism when he published his epic work, *Le chirurgien dentiste, ou, traite des dents* and unlike the practitioners of the day, he made it freely available to all, saying, "I have perfected and also invented several artificial pieces both for substituting a part of the teeth and for remedying their entire loss . . . and to the prejudice of my own interests, I now give the most exact description possible of them."

It is recalled in Black's time great legal battles raged to jealously retain the rights and the profits for any newly found knowledge. Notable examples were Morton's anesthesia, Goodyear's Vulcanite and McTaggart's casting machine. All had their day in patent litigation. Not so with G.V. Black. By openly publishing in infinite detail his years of scientific endeavour he freely gave to the world a composition for dental alloy that would remain essentially unchanged to this day.

The Search for a "new" Amalgam

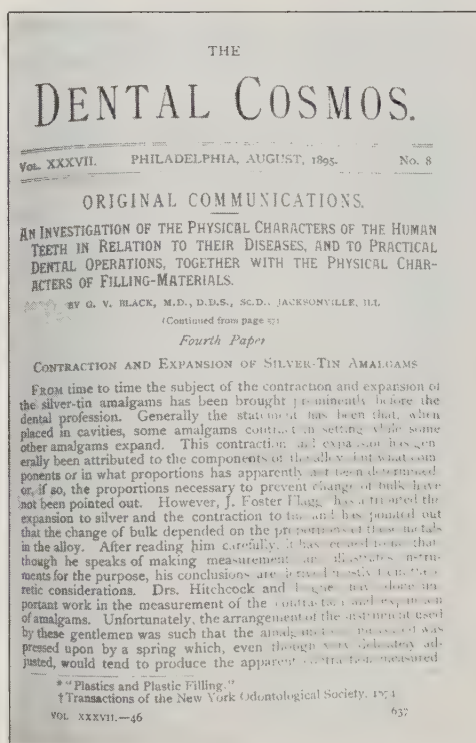
A paragraph from a 1986 presentation⁷ in Red Deer, Alberta, by W.V. Youdelis, PhD, outlines some of the major research in dental amalgam after Dr. Black's publication.

"Following Black's introductory work on amalgam there was about a 15 year



G.V. Black, MD, DDS, ScD, "Professionalism and genius".

lull in the research, following which appeared the work of Joyner (1911) and Knight and Joyner (1913) on the setting reactions in dental amalgam. The theory on the setting reactions was further advanced by the researches of Gray (1923) and Gaylor (1935-37). The most extensive detailed work on the phase compositions, structure, and reactions in amalgam is that by the metallurgist Gaylor, who published most of her work in metallurgical journals. Although Gaylor's work was done about 50 years ago, the reactions proposed by Gaylor are generally accepted today with minor modifications."



The opening page of Dr. G.V. Black's original paper on the formulation of silver amalgam.

Except for minor incremental improvements to Black's original formulation, there were no significant advances in dental amalgam development until 1962.

Dr. William V. Youdelis

A young metallurgist raised on the outskirts of Edmonton, who received his early education in a one-room school house, was to change the world of dental amalgam. Bill Youdelis received a degree in mining engineering from the University of Alberta at only 20 years of age and immediately went to work in the mines in Steep Rock, Ontario. Realizing he was more of an analyst and theorist he returned to the books and earned a Master's Degree and PhD in metallurgy from McGill University. After working a short time in the aluminum industry he returned to Edmonton in 1959 to join the Department of Mining and Metallurgy at the University of Alberta.

A friendly family argument

In Edmonton Bill Youdelis would visit his parents' home each Sunday. His own marriage had broken up, and because he was raising his two sons on his own, he found relief and comfort in the family gathering of parents, brother, sister and seven children.

Dr. Youdelis recounted that each Sunday he and his brother Ralph would get into "friendly intellectual discussions" (arguments?) about their chosen professions. Dr. Ralph Youdelis received his dental degree from University of Alberta, followed by a graduate degree in restorative dentistry from University of Washington. He subsequently accepted a staff position at Alberta's Faculty of Dentistry.

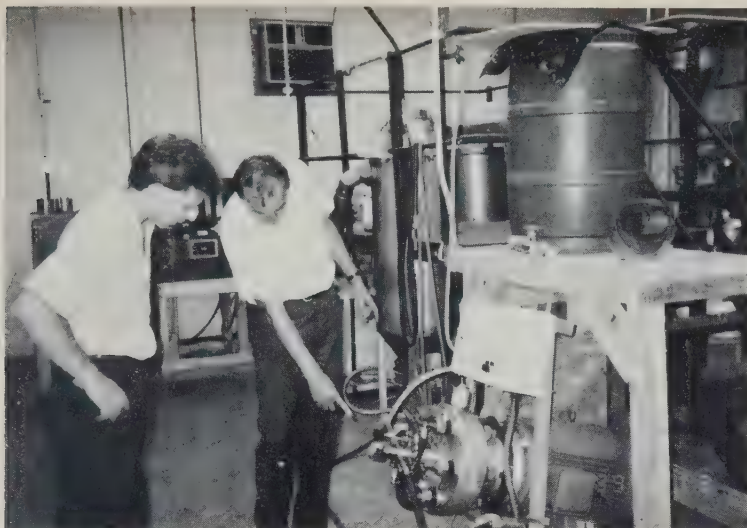
Bill remembers the "conversation" going somewhat. . .

Ralph: "The silver amalgam we're using is "crap". You're supposed to be a metallurgist. If you're so smart why don't you make a better alloy."

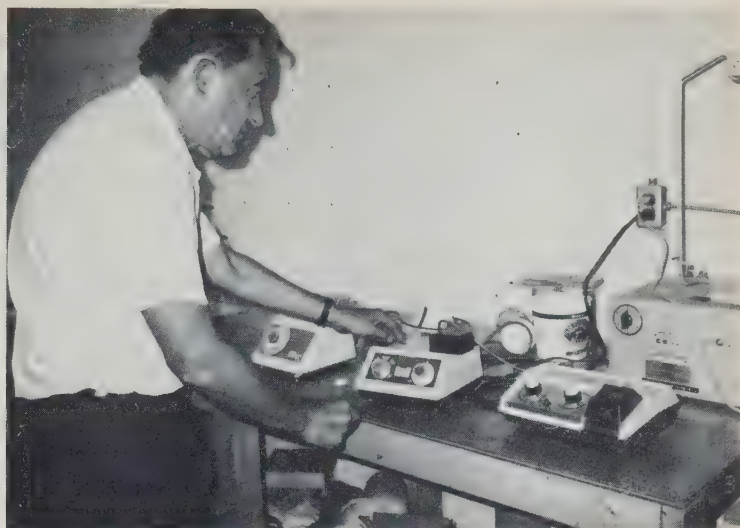
Bill: "O.K. I will! You dentists need all the help you can get!"

Dispersion Alloy

It was perhaps just one of those chance happenings that the brother of a dentist was a PhD metallurgist who had been working on dispersion strengthening aluminum alloys for the aerospace industry. Bill Youdelis knew that if you took an alloy and dispersed throughout it another metallic phase that was harder and stronger the end result was a dramatically improved alloy. It worked for aluminum, why not for silver amalgam?



Dr. William Youdelis discusses with his assistant, Mr. Rob Lowe, a particular phase of alloy manufacturing.



Dr. William Youdelis testing various mixes of dental amalgam in his Windsor, Ont., plant.

Dr. Youdelis applied for, and with the encouragement and indispensable support of Dr. Cosmo R. Castaldi (in the Faculty of Dentistry at the University of Alberta at the time) and received a modest grant between \$6,000. and \$7,000. from the National Research Council of Canada to pursue brother Ralph's challenge. In their University laboratory Bill Youdelis and a young graduate student, David Innes, experimented for the next two years with the dispersion theory.

Somewhat like Dr. G.V. Black years before, Youdelis and Innes had to create and improvise some of their own testing apparatus. The result was a dramatic improvement over any previous amalgam alloy. They had taken Black's original formula for which no real improvement had been made for over 65 years and produced a superior filling material. By increasing the traditional five per cent copper to 12 per cent they found the larger amount of copper eliminated the weak, plastic and corrodible tin/mercury (gamma-2) phase present in previous amalgam restorations.

The new formula and manufacturing process decreased the "creep" by 600 per cent and increased the compressive strength by more than 30 per cent.

No One Asked a Single Question!

Dr. Youdelis today relates jokingly how he was received when he first presented his dispersion alloy results at an I.A.D.R. Meeting in St. Louis, Mo., in 1962.

"There were over 500 dentists at the lecture. A number of dental materials people were in the audience but very few if any were metallurgists. When I finished presenting my paper accompa-

nied by many metallurgical graphs and charts on the different phases and planes, I asked for questions. Not one single question — not one. I was really puzzled because David Innes and I knew we had made a significant breakthrough. However, I felt fully rewarded when Dr. Eugene Skinner, the great dental materials expert from Northwestern University Dental School, came forward after my lecture to congratulate me".

The first published report of the "new" alloy appeared in the Journal of the Canadian Dental Association in 1963.⁸ The conclusions of the publication were noteworthy. . .

"The results show that dispersion strengthening can be successfully applied to mercury amalgams. The flow is most notably decreased by adding the dispersion powder to the amalgam. For the standard alloy matrix flow was decreased by more than 600 per cent and the compressive strength was increased by more than 30 per cent".

The Birth of "Dispersalloy"

Recognizing he had a winner, Dr. Youdelis set about to apply for patents in Canada and the United States for the dispersed phase amalgam which he was to call "Dispersalloy". With the help of an oil field executive, Mr. Fred Drury, a fledgling company, Western Metallurgical Ltd. (Edmonton) was launched in 1964 and began to produce and market the new alloy. Said Youdelis, "I had the know-how and the product, Fred Drury had the faith and the money".

Like many new ventures "Dispersalloy" didn't take off like a rocket. It had to slowly earn its own credibility in dental

offices, faculty clinics and corporate structures. Dr. Youdelis was going through a difficult time. In 1965 he had moved to Windsor, Ontario, where he joined the Department of Engineering Materials at the University of Windsor. Between raising his two sons on his own, flying back and forth to Edmonton to look after "Dispersalloy's" interests, life was hectic.

Patents were slow being granted. Rights were not received for the United States until 1967 and then 1968 in Canada (despite Canadian rights being applied for first). There was no significant marketing of "Dispersalloy" in the United States until Dr. Morris Weikel, a San Diego dentist, was granted production and marketing rights. The acceptance of "Dispersalloy", both in North America and Europe, gradually increased and accelerated. It soon became evident Western Metallurgical's production and marketing from its Edmonton plant, combined with Weikel's efforts in the United States, would not meet the demand.

When a major global conglomerate, Penwalt Corporation, threatened to go into production and marketing of a "Dispersalloy" copy (on the grounds that a minor technicality in the application voided the patent), the rights to "Dispersalloy" were sold to Johnson & Johnson. Following the sale to Johnson & Johnson, Dr. Weikel's son, Gary, began to market a competitive product. "Phasealloy", creating a problem that had to be resolved at the time because of infringement of the Youdelis patent.

Asked if he made millions from the sale Dr. Youdelis quietly smiled and said, "Everyone thinks I became a millionaire, but if the truth is to be known, comparatively I only made cents on royalties.

Considering it is estimated J&J sold as much as up to \$50 million worth of "Dispersalloy" worldwide in one of their better years I suppose I should be a millionaire. But here I am still in Windsor at my old job as a University professor".

Even if he didn't make a fortune from inventing a new amalgam Dr. Youdelis does have the satisfaction of knowing that after the patent rights ran out in 1985, his alloy was eventually copied by every major producer in the world.

The Mercury "Scare"

Mercury has long been known to have toxic effects. It was one of the very factors raised during the Amalgam Wars of the 1840s. In recent years, particularly influenced by the controversial research of Dr. Hal Huggins of Colorado Springs, Dr. Murray Vimy and Fritz Lorscheider of Calgary and Dr. David Eggleston of Los Angeles, there have been waves of concern both within the profession and in the media regarding mercury toxicity.

Dental Material experts from both the Canadian and American Dental Associations have thoroughly investigated all available scientific data. Both organizations have come out strongly in favour of the continued use of silver filling materials, at the same time issuing words of caution in two main areas; mercury hygiene in the dental office and the potential risk for the very rare patient who has an allergy.

Associations Affirm Safety of Amalgam

As recently as July of 1989 the American Dental Association has issued an update on the safety of dental amalgam,⁹

"The councils have reviewed extant scientific information and reaffirm the Association's position that amalgam is safe for patients not allergic to mercury".

The Canadian Dental Association's Council on Dental Materials and Devices reported to the Board of Governors in March of 1988. . .

"The Council reviewed, once again, its position on the use of mercury in dental amalgam and did not feel that the information provided from various sources since its last meeting was conclusive enough to make Council members reverse its position. (See Report to the 1987 Board of Governors for details.)"^{10,11}

Prominent dental researchers, Dr. Derek W. Jones of Halifax,¹² Dr. Dennis Smith of Toronto,¹³ and Dr. Ron Jordan of Winnipeg,¹⁴ have confirmed confidence in the continued use of amalgam. However, all the confirmations of associations

and individuals support continued research.

Indium and Mercury

Having produced a winner with his dispersion amalgam theory Bill Youdelis' enquiring mind didn't take long to attack the problem of mercury content. As early as 1965 while still at the University of Alberta, he began his research on the development of a low-mercury release amalgam.

Dr. Youdelis knew of indium's characteristic property of being a good wetting agent and its affinity for mercury, cutting down on its activity. He reasoned that if he mixed the right amount of indium with "Dispersalloy" he could not only decrease the amount of mercury required for an amalgam mix but what mercury there was would be better bound to restrict its release.

It took ten years between 1965 and 1975, flying back and forth between his Windsor laboratory and Western Metallurgical's plant in Edmonton before the right formula was achieved. Thus was born another new amalgam. Dr. Youdelis named it "Indisperse" and by 1979 he had it patented in United States, Canada and 28 other countries.

Publications in 1979^{15,16,17} outlined the advantages of incorporating 10 per cent indium powder and 42 per cent dispersion phase powder with a conventional-type dental alloy. More recent studies conducted in the Department of Restorative Dentistry at the University of Washington by Powell, Johnson and Bales^{18,19} indicates there is up to 80 per cent reduction in mercury release, a lower creep and a substantial increase in strength with "Indisperse". Most significant were the results of a clinical study that showed "Indisperse" to have a lower incidence of marginal failure when compared to "Dispersalloy". "Indisperse" has recently been granted ADA certification.

The Future

When Dr. Youdelis was asked if dentists were clamouring for his new amalgam he replied, "Not really. It hasn't taken off as I expected but I have confidence that dentists will eventually see the advantage of an amalgam releasing less mercury. I've invested everything I have, and more, into a plant in Windsor which has the capacity for the total Canadian market but being a small operator up against the "giants" makes merchandising difficult".

Dr. Youdelis went on to explain when "Dispersalloy" first went on the market it displayed a dramatic improvement over the old Black formula. The indium alloy

however doesn't visibly demonstrate its main advantage of releasing less mercury. He also indicated those dentists favoring a wet amalgam find the newer alloy more difficult to become accustomed to because of its drier texture.

Only time will really dictate the future of silver amalgam filling materials. There are those who predict the composite materials will be the only type utilized in the coming years.

Whatever the future, dentists around the world owe a great debt to a Canadian metallurgist, Dr. William Youdelis, who in the course of accepting a challenge from his dentist brother, improved the quality of fillings for millions of patients. Δ

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Following is an edited excerpt from a clinical study published in the Compendium of Continuing Education in Dentistry, Supplement No. 6, 1985. The study was performed by Eric J. Coontz, D.D.S., M.S., Loyola University.

METHODOLOGY:

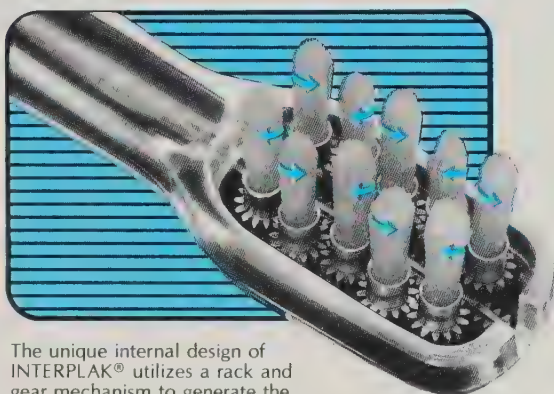
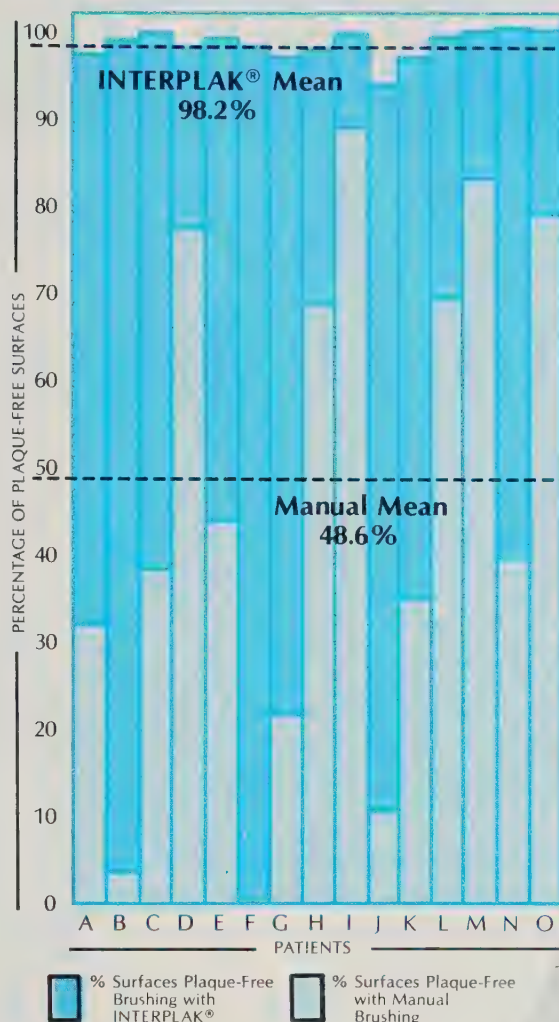
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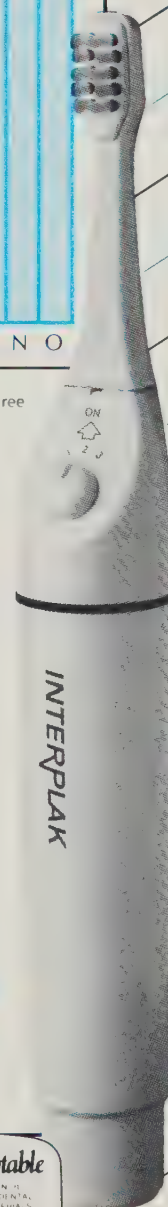
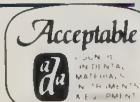
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Synovial chondromatosis of the TMJ: Case report and review of literature

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G.C. White, DDS, FRCD(C)
Toronto

ABSTRACT

Synovial chondromatosis is an uncommon benign condition in which chondroid bodies are formed within the joint spaces. As calcification of these joint bodies progresses, the radiographic appearance may mimic that seen in other more common pathologic processes including degenerative joint disease. This report describes the clinical and histopathological findings in a case in which 22 "joint mice" were encountered in the joint space of a patient presenting with symptoms of temporomandibular joint dysfunction.

SOMMAIRE

La chondromatose synoviale est une affection bénigne rare causée par la formation de substances chondroïdes dans les articulations. Au fur et à mesure que ces substances se calcifient, leur image radiographique peut ressembler à celle qu'on obtient avec des cas pathologiques plus fréquents, l'arthrose comprise. Dans cet article, on rapporte les découvertes cliniques et histopathologiques faites dans un cas où on a compté 22 "souris" dans l'interligne articulaire d'un patient présentant des symptômes de dysfonction de l'articulation temporo-mandibulaire.

Synovial chondromatosis (SC) is an uncommon benign condition characterized by the presence of synovially attached or loose bodies within the joint spaces. The condition primarily affects the larger joints and especially the knees.¹ Axhausen² described the first case of SC affecting the TMJ in 1933. Subsequent cases of TMJ SC have been reported, alone or in combination with villonodular synovitis.^{3,4}

The initial symptoms of SC are often compatible with a diagnosis of internal derangement or degenerative joint disease (DJD) and include facial pain, limitation of motion with deviation to the affected side, and crepitus.⁵ As calcification of the chondroid bodies progresses, the radiographic appearance may mimic osteophyte formation, degenerative changes and fossa and condylar irregularities seen in DJD. Ronald et al.⁵ noted that pre-auricular swelling, when present, served as an important characteristic distinguishing SC from DJD. In the absence of both swelling and radiographic evidence of particles, an erroneous diagnosis is quite conceivable.⁶

The present case illustrates some of the similarities in presentation of internal derangement, degenerative joint disease and synovial chondromatosis.

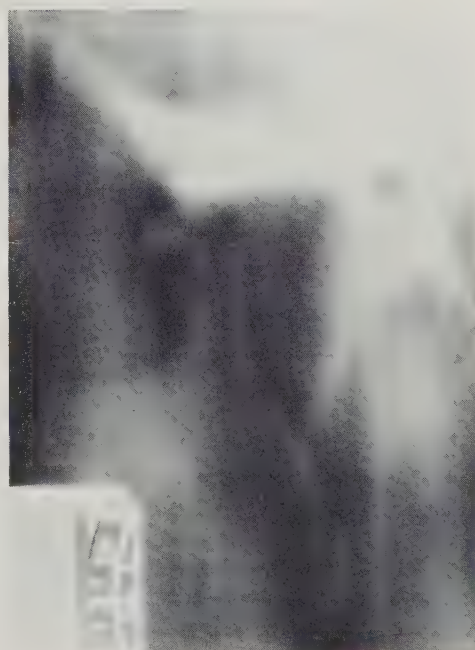


Fig. 1. Pre-operative tomogram of right TMJ.

Case Report

A 33-year-old female with a history of progressive pain, clicking, crunching and frequent locking of the right TMJ, increasing in severity over a one-year period, was seen on referral from her physician. The patient described several episodes of extreme right pre-auricular pain of three days' duration over the past month, superimposed over a progressively worsening vague right TMJ discomfort. No antecedent history of trauma was obtained and the medical history was non-contributory.

Examination revealed right preauricular tenderness without evidence of local swelling, redness or heat. No asymmetry or evidence of local trauma were noted. During function, a late reciprocal click and questionable crepitus were noted. Opening and protrusive excursions were accompanied by a deviation of the mandible to the right with accompanying ipsilateral TMJ pain. The left TMJ was asymptomatic.

Plain films and tomograms of the TMJs in open and closed mouth position revealed an apparent prominence of the anterior portion of the right condyle and a body defect inferior to the prominence (Fig. 1). The cortical outline of the condylar head in the area of the prominence was not easily distinguished. The articular eminence appeared somewhat flattened. A differential diagnosis of degenerative joint disease or congenital anomaly was given high priority on the radiology report, while other erosive diseases were considered less probable.

Exploratory surgery was performed under general anesthesia, with dissection to the joint capsule accomplished through a preauricular incision. The joint capsule was found to be distended laterally. Upon entering the superior joint space, a thick

clear fluid and multiple loose bodies were encountered (Fig. 2). A total of 22 smooth, firm glistening white bodies were removed from their synovial attachment or expressed freely from the superior joint compartment (Fig. 3). Several large bodies measured almost 1 cm. in diameter. The inferior joint space was not affected. The disc was found to be anteromedially displaced and was subsequently repositioned. The condylar cartilage was found to be intact. Prior to wound closure, the synovium was excised and the joint spaces were copiously irrigated.

Postoperative recovery was without incidence and the patient was discharged from hospital on the second postoperative day. The patient was free of pain and joint sounds were absent. She remained completely asymptomatic with no functional limitations at three month and one year recall.

The histologic diagnosis of the surgical specimens was multiple osteocartilaginous bodies (joint mice) (Fig. 4).

Discussion

Chondromatosis has been described by Jaffe⁷ as a condition in which foci of cartilage develop by metaplasia of the connective tissue of the synovial membrane. Synovial mesenchyme is thought to give rise to synovial and subsynovial tissues in addition to intracapsular structures, including ligaments, tendons and fibrocartilage.⁸ Miller⁹ and his associates discussed the potential for cartilage metaplasia in embryonal cell rests within the subintimal layer of mature synovial tissue, and most reported cases describe chondral bodies arising from the synovial lining of the TMJ proper. Silver et al.¹⁰ recently reported a case which appeared to arise from the sublining connective tissue of the disc. The cartilaginous bodies may be loose or attached and are generally multiple. Stoneman et al.¹¹ have reported the rare occurrence of a single synovial derived osseous body acting as a pseudocondyle. While Kusen¹² reported that a traumatic etiology seems probable, this cannot always be demonstrated. Jaffe⁷ reported that most patients do not report a history of trauma. The present case illustrates no history of macro-trauma. The presence of an anteriorly displaced disc and nocturnal bruxism habit in association with synovial chondrometaplasia may suggest that repetitive microtrauma may have been an etiological factor in the case; however we were unable to determine if the displaced disc was cause, effect or incidental finding in this case of SC.

Synovial chondromatosis of the larger joints shows a 2:1 male predominance and is most prevalent in the 30-60 year age group;¹³ however when the TMJ is affected, a female predominance is noted. Blankestijn et al.⁶ found 12 men and 16 women in a survey of histopathologically verified cases of SC prior to 1983. The age range was found to be 30-60, with a mean age of 45.5 years. The female predominance and age distribution do not serve to distinguish this condition from many of the most common TMJ arthropathies.

Symptoms and clinical findings of SC may include temporal headache, limitation of motion (10/23), tenderness or pain in or about the joint area (21/28),⁶ popping or cracking sounds during mandibular movement, locking of the joint, and preauricular swelling (23/28).⁶ Ronald et al.⁵ identified preauricular swelling as an important characteristic distinguishing this disease from uncomplicated DJD. The absence of preauricular swelling did not afford the stated differentiation in the present case. Since the clinical signs and symptoms of anterior



Fig. 2. Intra-operative appearance immediately after entering superior joint space. Large white free joint body is visible.

displacement of the TMJ disc and DJD may overlap those of SC, other diagnostic aids are often necessary to make a definitive diagnosis.

Radiographic abnormalities have been described in 60 per cent of reported cases of SC.⁶ Free and attached chondroid bodies may continue to grow and mature

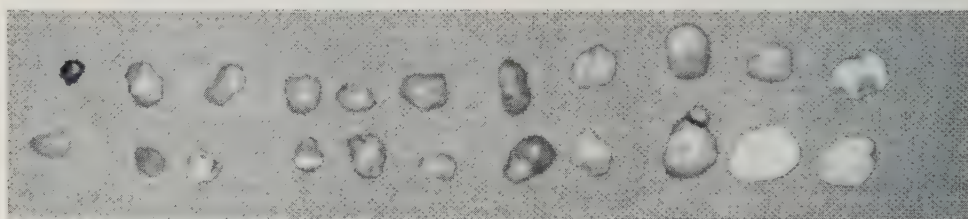


Fig. 3. Surgical specimen consisting of 22 "joint mice".

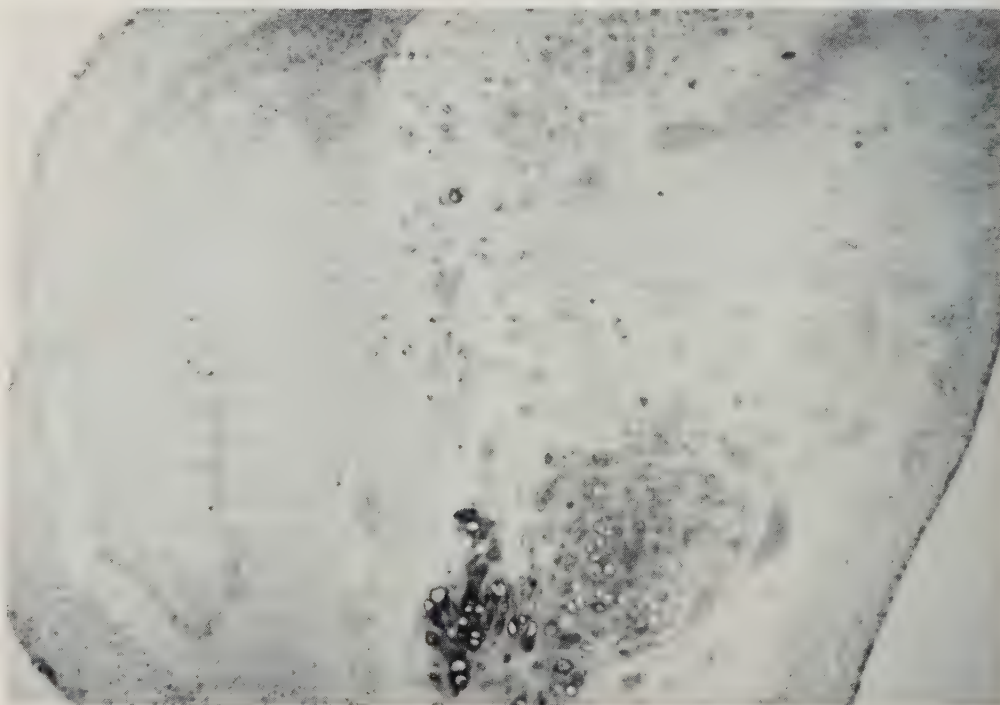


Fig. 4. Histopathologic section of loose body indicating chondroid nature.

inside the joint space, receiving nourishment from the surrounding synovial fluid. The bodies may eventually calcify or ossify,¹⁴ making radiologic identification easier. Widening of the joint space, limitation of motion, irregularity of joint surfaces, presence of calcified loose bodies and sclerosis of the glenoid fossa and condyle were identified as possible radiographic findings of SC of the TMJ.¹⁵ Few of these criteria will allow for definitive diagnosis since many of the features may be shared with those noted in other TMJ disorders. In addition, other conditions may present radiographic evidence of loose joint bodies,^{7,14} including osteochondritis dissecans, osteoarthritis, fracture, and neuropathic arthropathies.

In the present case, definitive diagnosis was not possible on the basis of findings of plain radiography and DJD was considered the most likely diagnosis. Manco and DeLuke¹⁶ state that the failure of plain radiography to visualize the partially calcified loose bodies, so easily seen with CT, underscores the value of CT imaging in such cases.

Schmidt and Ogata¹⁷ noted that changes taking place in the synovial membrane are often reflected in the results of synovioanalysis; however, the value of this procedure in definitive diagnosis is not proven. Lomba et al.¹⁸ state that "surgical exploration of the joint is justified in patients, with or without evidence of free bodies, when symptoms suggestive of arthropathies exist and if swelling, pain and limitation of motion persist or become worse."

The preferred treatment of SC appears to be total synovectomy and removal of all free bodies, although removal of free bodies with partial synovectomy^{7,19} has also been suggested. Although recurrence has not been documented in the TMJ, the potential for recurrence may justify total synovectomy. Condylectomy has been suggested by various authors in order to facilitate total synovectomy and inspection of the joint space; however, in the present case this was felt to be unnecessary. This is in agreement with Blankestijn's findings.⁶

Summary

The clinical and radiographic findings in a case of synovial chondromatosis of the TMJ are described. The difficulties in differentiating this from other conditions of the TMJ, on the basis of clinical presentation and plain radiography alone, are highlighted. △

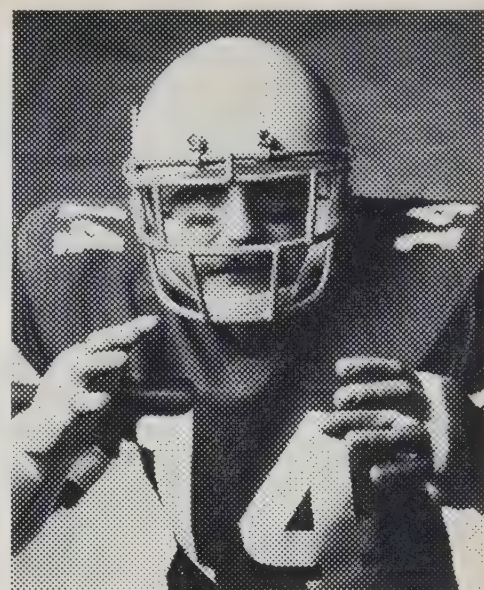
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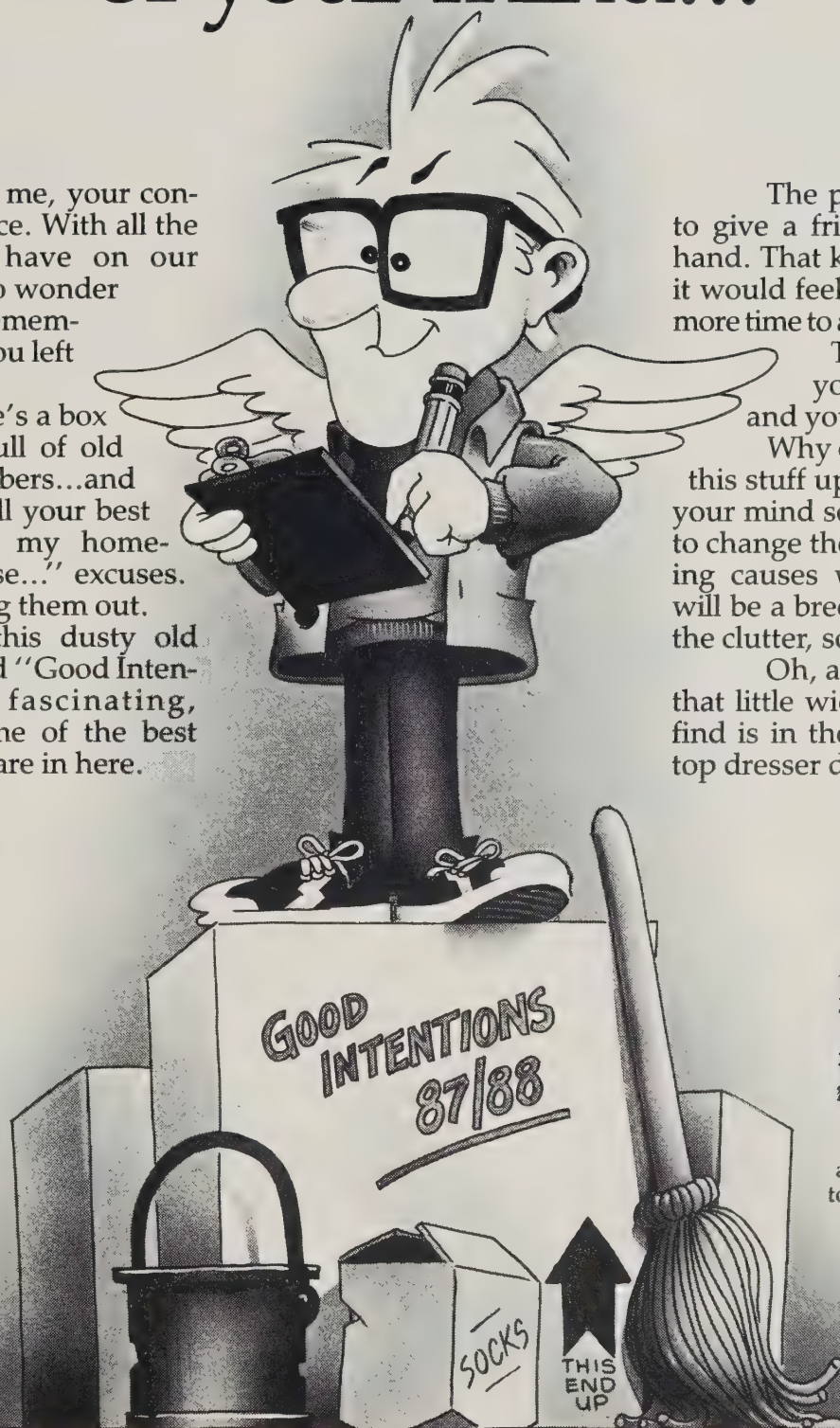
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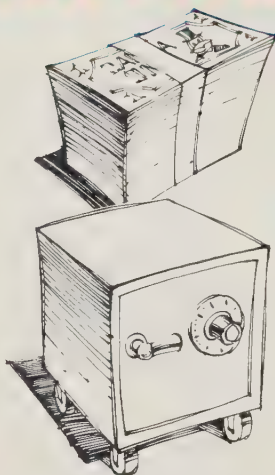
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The thyroid gland and the dental practitioner

Earle R. Young, BSc, DDS, BScD, MSc, FADSA
Toronto

ABSTRACT

The thyroid gland has an important function in almost every aspect of human physiology. As well, its location in the neck allows for easy evaluation by the dentist. Part I of this paper reviews the normal functions of the thyroid gland as well as systemic effects caused by abnormal function. This is supplemented by easily-acquired methods of physical examination of the thyroid gland suitable for the dental practitioner. Part II is a case report highlighting the potential adverse effects of dental treatment of a patient who had poorly controlled thyroid function following total thyroidectomy.

SOMMAIRE

La glande thyroïde joue un rôle important à presque tous les points de vue de la physiologie humaine. Comme elle est logée dans le cou, il est facile pour le dentiste d'en faire l'examen. Dans la première partie de cet article, on passe en revue les fonctions normales de la thyroïde ainsi que les conséquences systémiques de son mauvais fonctionnement, à quoi on ajoute des moyens faciles pour le praticien dentaire d'en faire l'examen. Dans la seconde partie, on présente un cas illustrant les effets contraires possibles d'un traitement dentaire donné à un patient qui, à la suite d'une thyroïdectomie totale, voit diminuées les fonctions normalement commandées par la thyroïde.

PART I

Anatomy

Fully developed, the thyroid gland contains two lateral lobes joined by a median band called the isthmus, that lies below the cricoid cartilage at the level of the second and third tracheal rings.

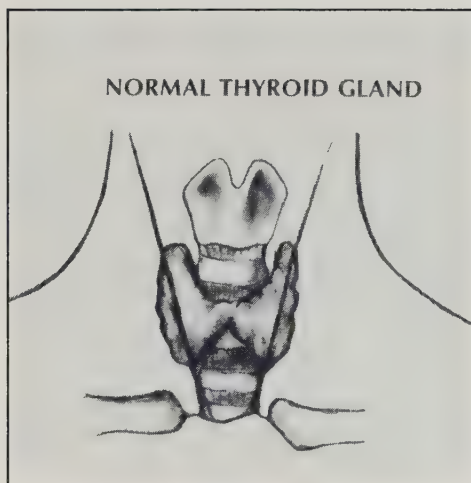


Fig. 1. The normal thyroid gland (from Bates, 4th ed., 1987, with permission).

Normally the right lobe is 25 per cent larger than the left and the thyroid gland is slightly larger in females than males. The lateral lobes are often as high as the superior border of the thyroid cartilage and are partially covered by the sternocleidomastoid muscles (Fig. 1). In about one-third of normal individuals, a remnant extends upward from the isthmus, lying slightly to the left of the midline. This is called the pyramidal lobe.¹ The thyroid gland, because it is firmly fixed to the trachea and larynx, ascends with them during swallowing.^{2,3}

Physical examination

The basic principles of inspection, palpation, and auscultation apply when examining the thyroid gland. Generally speaking, the thyroid is not palpable, although in a thin person, the isthmus may be felt. A few lymph nodes are normally present in the thyrohyoid membrane and when enlarged are termed Delphian nodes and frequently suggest malignancy of the thyroid gland.² Basic inspection of the thyroid is frequently best done with the patient's neck extended.³

Palpation of the thyroid is often best accomplished from behind the patient. Again, the patient's neck should be

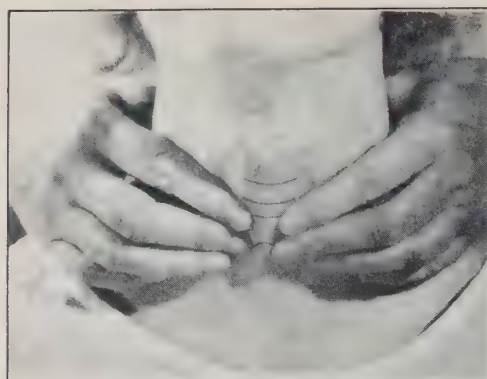
slightly extended. Ask the patient to swallow, as you feel for the isthmus and the lateral lobes (Fig. 2). Then ask the patient to flex his neck slightly forward and to the right. Displace the thyroid cartilage with the fingers of your left hand. Palpate with your right hand as you place your thumb deep to and behind the sternomastoid muscle and your index and middle fingers in front of it (Fig. 3). Ask the patient to swallow again. Repeat the manoeuvres on the left side. Although physical characteristics of size, shape and consistency can be determined, they tell little about thyroid function.³ Because thyroid enlargement often causes tracheal compression and deviation, the trachea should be inspected and palpated in the suprasternal notch for any displacement.

If the thyroid gland is enlarged, auscultate (listen) over the lateral lobes with the diaphragm or lightly with the bell of the stethoscope for a sound similar to a cardiac murmur — a bruit. Retrosternal extension can frequently be demonstrated by jugular venous distension and congestion of the neck though rarely the face and intraoral structures.

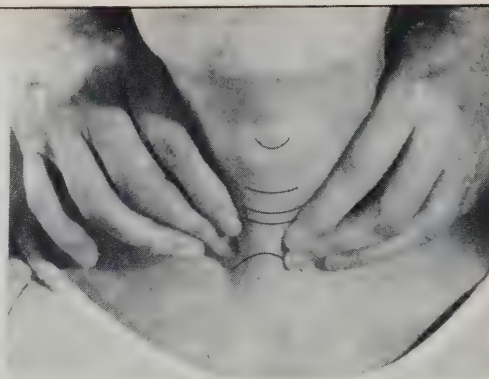
Physiology

The thyroid gland is composed of a large number of closed follicles — the structural units of the gland — which consist of epithelium enclosing a cavity filled with colloid. The follicles are embedded in a delicate network of reticular fibres which also support a close net of capillaries. The major constituent of the colloid is the glycoprotein thyroglobulin. The gland has a rich blood supply arising from the superior and inferior thyroid arteries.

The mechanisms of thyroid hormone synthesis have been well described.^{4,5} Briefly, the thyroid takes up iodine avidly from the blood. Iodine is trapped and concentrated, then oxidized by peroxidase enzyme. The acinar cells then iodinate tyrosine to mono or diiodotyrosine and these molecules are then coupled to form either triiodo thyronine (T₃) or thyroxine



FEELING THE ISTHMUS



FEELING THE LATERAL LOBES

Fig. 2. Palpation of the anterior surface of the thyroid gland with the neck slightly extended (from Bates, 4th ed., 1987, with permission).

(T_4) with respectively three or four iodine atoms in the molecules. These hormones are stored with thyroglobulin in the acinar colloid. All four steps, the trapping of iodine, its organification, storage and release are stimulated by pituitary thyrotropin-stimulating hormone (TSH) which is in turn controlled by thyrotropin-releasing hormone (TRH) from the hypothalamus. There is a negative feedback system involving the circulating thyroid hormones acting on the hypothalamus and/or the pituitary. Thyroid hormones act on cells via the adenyl cyclase system after combining with a nuclear receptor followed by protein (enzyme) synthesis, thereby influencing nuclear, ribosomal and mitochondrial function.^{4,6-8} Some of the physiologic effects of thyroid hormone are shown in **Table I**. T_3 is more active than T_4 although it makes up only about 10 per cent of the total circulating blood levels of thyroid hormones. T_3 is more loosely bound to plasma proteins and has a shorter half-life. Most thyroid hormone is reversibly bound to thyroxine-binding globulin (TBG), the rest to albumin. It is thought that most T_4 is converted to the more active T_3 peripherally.⁴

Epinephrine and norepinephrine induce release of thyroid hormone. These effects are direct and in contrast to the well-known synergistic effects of catecholamines and thyroid hormone at the tissue level.^{4,7,9,10}

The enlarged thyroid — Clinical implications

The enlarged thyroid gland may, or may not, have an associated abnormal hormone secretion and the possibility of hypo or hyperthyroidism should always be considered. Thyroid swellings can be benign or malignant. They may be diffuse, single nodules or multinodular and can extend retrosternally into the thorax.

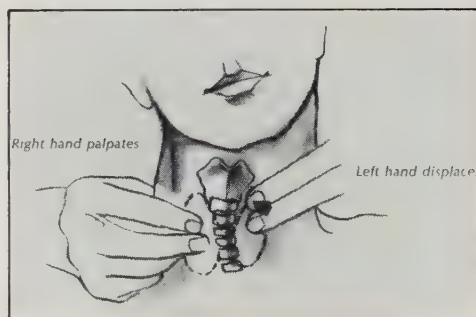


Fig. 3. Palpation of the thyroid gland from behind the patient (from Bates, 4th ed., 1987, with permission).

The major problem in treating the patient with an enlarged thyroid is often one of airway management, although the systemic effects of thyroid disease must be anticipated.

A goitre is defined as any enlargement of the thyroid gland. On clinical examination, its size, shape, consistency, symmetry, irregularity, mobility and presence or absence of a thrill or bruit should be established. Many classifications of thyroid enlargement have been proposed;^{1,2,8} however, the one shown in **Figure 4** is simple and is widely accepted. A large diffuse goitre is often associated with hyperthyroidism, endemic goitre due to iodine deficiency, with inflammatory conditions and with some less common conditions. A small diffuse goitre is usually associated with physiologic processes like menstruation, pregnancy or puberty. The inflammatory conditions tend to be painful on palpation. The multinodular goitre tends to have two or more identifiable nodules and suggests a metabolic process rather than a malignant one. A single nodule suggests a cyst, benign tumour (adenoma) or malignancy. Hardness, rapid enlargement and fixation to sur-

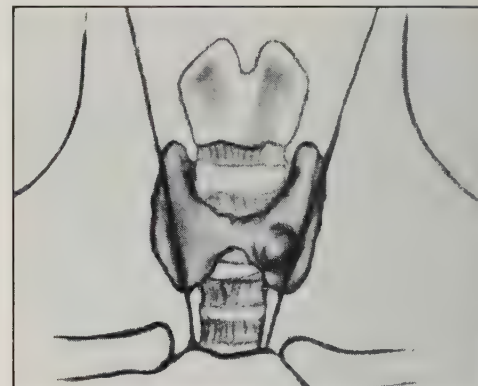
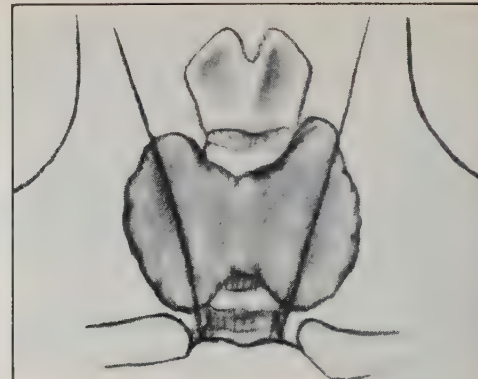


Fig. 4. A common classification of thyroid enlargement (from Bates, 4th ed., 1987, with permission).

rounding tissue should raise a high degree of suspicion for malignancy.

Hyperthyroidism

As mentioned, the presence of a goitre does not necessarily indicate the patient's metabolic state. Therefore, the patient may be hyperthyroid, hypothyroid or euthyroid (normal function). **Table II** lists some of the signs of hyperthyroidism. Although the degree of hyperfunction may vary, it should be noted that thyrotoxic crisis or storm is an extreme form of hyperthyroidism which may be precipitated by infection, trauma or stress in a poorly controlled patient.¹¹⁻¹³ The dentist should be aware that epinephrine may precipitate a fatal cardiovascular state due to the increased sensitivity of tissue receptors to catecholamines.^{4,7,9,13} Atro-

TABLE I

Some physiological effects of thyroid hormone

- increase protein synthesis
- increased glucose uptake, glycolysis and gluconeogenesis
- mobilization of fat stores
- lowering of blood cholesterol
- increase in mitochondrial size with increased ATP levels (cellular energy) and increased basal metabolic rate (BMR)
- increased $\text{Na}^+ - \text{K}^+$ ATPase leading to cellular ionic transport
- increased blood volume
- increased red blood cell maturation
- increased myosin-ATPase activity causing an increased myocardial contractility
- increased calcium turnover
- environmental adaptation
- cell differentiation

pine should also be avoided.¹³ Hormonal excess produces structural changes in the mitochondria throughout the body, leading to alterations in oxidative phosphorylation (uncoupling).⁷

Hyperthyroidism has a multiple etiology. It may be due to hyperfunction of the pituitary or hypothalamus, increased levels of T_3 and/or T_4 from neoplasms within the thyroid (toxic nodules),⁸ from diffuse activity of the gland,¹⁴ poor feedback control in higher centres of the CNS⁸ or by autoimmune mechanisms in which globulins produced by lymphoid tissue act in combination with a cytoplasmic mitotic factor, causing TSH-like activity.^{13,15} Similarly, ectopic tissue may cause hyperactivity.¹⁶ Inflammation of the thyroid gland may lead to tissue destruction with release of preformed hormone.⁸

Although catecholamine levels do not appear to be directly elevated, their actions are modified via thyroid hormones action or neurosympathetic outflow, presynaptic control and re-uptake mechanisms.^{6,17} There also appears to be altered target cell sensitivity from a change in adrenoreceptor density or binding affinity.^{6,7,17} This is of great significance to the dentist in that epinephrine-containing solutions should be used with extreme caution. There is no evidence that the sympathetic nervous system or adrenal medulla are overactive.⁶

Hypothyroidism

Hypothyroidism may also manifest externally with goitre formation. Some causes of hypothyroidism are listed in Table III. Like hyperthyroidism, hypothyroidism

TABLE II

Clinical and physiological features of hypothyroidism and hyperthyroidism

	Hypothyroidism	Hyperthyroidism
Physical Appearance	→ insidious onset with fatigue, lethargy and depression → cool dry skin, coarse, brittle hair, deep voice → fluid retention and weight gain → cold intolerance, decreased body temperature → airway compromise if goiter → macroglossia and delayed tooth eruption	→ emotionally labile, nervous, delirium → warm moist skin → skin pigmentation and hair loss → weight loss, dehydration, with vomiting and diarrhea despite increased appetite → heat intolerance, increased body temperature → airway compromise if goitre
Cardiovascular	→ bradycardia → low blood pressure → decreased cardiac output → degenerative vascular changes → decreased basal metabolic rate (BMR)	→ cardiac dysrhythmias such as atrial fibrillation, sinus tachycardia, premature beats, high-output congestive failure, angina → hyperdynamic cardiovascular system with full bounding pulse → increased oxygen requirement and carbon dioxide production
Eyes	→ periorbital puffiness	→ exophthalmos (proptosis), lidlag, lid spasm, diplopia
Musculo skeletal	→ peripheral neuropathy	→ proximal muscle weakness
CNS	→ extreme sensitivity to sedatives and respiratory depressants → delayed recovery → myxedematous coma	→ reduced effect from many drugs → often short duration of drug action → potentiation of symptoms with sympathomimetic drugs → "thyroid storm"

may be part of a generalized endocrine defect referred to as multiple endocrine adenomatosis.⁸ Signs of hypothyroidism are shown in Table II. The dentist should be aware of the extreme sensitivity to even small doses of sedatives and respiratory depressants, leading to loss of consciousness, cardiovascular collapse, and depressed respiration.¹⁸ Myxedematous coma can be precipitated by stress, trauma or infection in the poorly controlled hypothyroid patient and is accompanied by profound physiologic changes secondary to marked depletion of thyroid hormone stores.¹⁵ Rapid replacement with synthetic thyroid hormone could lead to cardiovascular symptoms such as angina.^{6,14,19} Indeed, it has been cautioned that even the euthyroid patient receiving synthetic supplements must

receive epinephrine-containing solutions in reduced doses. The maximum dose per appointment should not exceed 0.04 mg as the synthetic supplement may sensitize adrenoreceptors to exogenous epinephrine.^{6,9,15} This is of great importance to the dentist. It should be remembered that a 1:200,000 solution of epinephrine equals 0.005 mg epinephrine per ml of solution, which is about 0.01 mg per dental cartridge.

PART II

A 50-year-old female patient presented to the dental office for treatment under general anaesthesia. Her dental I.Q. was low and her state of dental health was extremely poor because her extreme

anxiety toward dental treatment precluded regular dental care. Her medical history was essentially non-contributory and on physical examination she appeared healthy. Her baseline blood pressure and pulse (rate, rhythm, volume) on initial, as well as subsequent visits, were within normal limits.

Over a period of months, she received a neurolept sedation technique on six occasions for outpatient dental treatment. This involved oral premedication with either 1 gm of Placidyl (Ethchlorvynol) or 0.5 mg Halcion (Triazolam) followed by intravenous administration of Valium 10-15 mg, Droperidol 1.25 mg and Demerol 25 mg. Intravenous medication was supplemented with up to 35 per cent nitrous oxide. Monitoring consisted of electrocardiogram (ECG), blood pressure (BP), a precordial stethoscope to continuously monitor respiratory and heart sounds as well as continuous pulse oximetry. Up to 1 litre of 5 per cent dextrose was infused through a 22-gauge angiocath placed in a peripheral vein. Cases lasted from one hour to three hours in duration, with the patient remaining rousable and comfortable throughout. Only during the 3-hour case was sedation supplemented using 2 mg increments of Valium administered at 70 and 100 minutes. All cases provided excellent operating conditions and all planned treatment was completed.

Two years following this initial series of appointments, the patient presented for recall examination. On physical examination she appeared healthy, however a diffuse soft-rubbery, non-tender enlargement of her thyroid gland was palpated. Her trachea was not deviated, no thrill was palpated or bruits auscultated. Her blood pressure and pulse remained within normal limits. She was referred to her physician for evaluation and subsequently to an endocrinologist. Total thyroidectomy was performed several weeks later and it was noted that the thyroid was showing "pre-malignant changes". Healing was uneventful and the patient was placed on synthetic thyroid supplement.

Four months following surgery the patient called the dental office in acute distress. She was examined and was seen to have many of the classic signs of poorly controlled hypothyroidism. She had a recent 25 pound weight gain, felt lethargic much of the time and her skin appeared cool and dry. Her voice was noticeably deeper and her hair brittle and dry. Because of the urgency of this case, the patient was advised she would receive a "light" sedation only. She was given 0.5 mg of Halcion (Triazolam) orally and

TABLE III

Some causes of hypothyroidism

Autoimmune disease
Congenital defects of the gland
Decreased dietary iodine
Female sex hormones
Corticosteroids
Pituitary and hypothalamic disease
Inflammatory conditions of the thyroid
Thyroidectomy
Drugs — lithium
— anti-thyroid drugs
— iodides (cough preparations)
— sulfonamides

a peripheral I.V. established. She received 4 mg of Valium slowly intravenously while breathing 100 per cent oxygen. Patient monitoring was as described previously. One and one-half hours was required for the completion of endodontic therapy on tooth 36.

The patient showed an exaggerated sensitivity to the medication, despite the much reduced dosages, and remained unconscious (non-rousable) for over one hour, although vital signs were stable and spontaneous respirations were adequate. She was discharged from the recovery room one hour after surgery.

Discussion

Thyroid disease is more common in females than males.² This is especially common during puberty, pregnancy and during administration of oral contraceptives. For example, estrogen appears to increase thyroid hormone binding to plasma proteins, thus lowering the free thyroid hormone levels, resulting in the pituitary pouring out excessive TSH in a compensatory fashion. Goitre formation is thus common.¹⁹ As well, corticosteroid administration may decrease iodine uptake by the thyroid, leading to a similar action by the pituitary.¹⁹

One of the most common complaints of thyroid enlargement is that of the adverse effect on one's appearance. Pressure symptoms may cause difficulty in swallowing or breathing. Stridor may be noticed, particularly on the alteration of neck posture. Recurrent laryngeal nerve involvement, particularly in cases of malignancy, may manifest as hoarseness.²⁰

This patient exhibited some of the classical signs of hypothyroidism (Table II). Despite the large size of her goitre prior to surgery, its apparent slow rate of growth made it unnoticed by the patient and her family. She exhibited no stridor, tracheal deviation or other airway problems but

did note that several friends remarked that "she sounded as if she had a cold".

Physical examination showing thyroid enlargement allowed for appropriate referral and subsequent thyroidectomy. The fact that the thyroid showed "pre-malignant changes" echoes the benefits of this early diagnosis.

Recognition of the patient's poorly controlled thyroid state at the subsequent visit allowed for successful treatment of an emergency dental situation. Avoidance of cardiovascular and respiratory depressants has been repeatedly stressed in these patients as has reduced drug doses and slow administration.^{15,18,20} Impaired respiratory, cardiovascular and stress responses are also frequently noted.²⁰ Despite the fact that the anaesthetic drug regime was drastically reduced in number of drugs administered as well as drug dosages, she showed a much exaggerated physiologic response when compared to previous sedation procedures. Following control of her dental emergency, she was referred back to her endocrinologist and is currently well-controlled on synthetic thyroid supplements. Her physical appearance has reverted to the euthyroid state. Δ

Dr. Young is assistant professor of anesthesia, Faculty of Dentistry, University of Toronto, and the Wellesley Hospital, Toronto.

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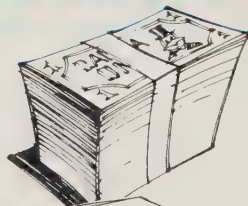
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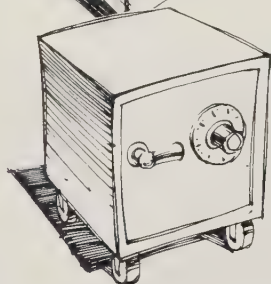
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Utilization of general anesthesia by general practitioners in Saskatchewan

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ABSTRACT

A survey of Saskatchewan general practitioners was carried out to investigate the utilization of general anesthesia for the completion of dental procedures. Of the total number of general practitioners (234) surveyed, 61.5 per cent responded that they had done at least one general anesthesia case during their dental career. With respect to current utilization in the province, 38.4 per cent (90) of the respondents did at least five general anesthesia cases per year. Other variables investigated were: number of cases per year, types of patients treated and adequacy of dental school training. Age of practitioner, year of graduation and community population were found to be significant ($p < 0.001$) variables in the utilization of general anesthesia by general practitioners in Saskatchewan.

SOMMAIRE

En Saskatchewan, on a effectué un sondage auprès des praticiens généraux pour savoir s'ils utilisaient l'anesthésie générale pour terminer des procédures dentaires. On en a interrogé 234 en tout et, sur ce nombre, 61,5 pour cent ont répondu qu'ils ont eu au moins un cas d'anesthésie générale durant leur carrière, alors que 38,4 pour cent (90) ont dit qu'ils en ont eu au moins cinq par année. Au cours de ce sondage, on a étudié d'autres facteurs comme le nombre de cas par année, les sortes de patients traités et la pertinence de la formation donnée par les écoles de médecine dentaire. En outre, l'âge du praticien, l'année où il a obtenu son diplôme et la population locale sont apparus comme d'importantes variables ($p < 0.001$) touchant l'utilisation de l'anesthésie générale par les praticiens généraux de la Saskatchewan.

Most dental care can be provided routinely utilizing local anesthesia. However, there is a group of dental patients who require psychological or pharmacological intervention to aid in provision of treatment. Even with these techniques, there still exists a group of patients who may require dental treatment utilizing general anesthesia.

General anesthesia has been indicated for use in the following situations:

1. Patients who require extensive surgical procedures or full-mouth restorations.
2. Patients who are uncooperative and will not allow dental procedures to be performed.
3. Patients with congenital or acquired abnormalities which make dental procedures very difficult.
4. Patients with significant medical disease.¹

Indications for utilizing general anesthesia in the dental treatment of children can include:

1. Children with physical, mental or sensorial handicaps.
2. Children, regardless of age, who consistently resist conventional management procedures, including restraints and premedication.
3. Children with significant medical disease.
4. Children with extensive trauma to the orofacial complex.²

Pediatric dentists and oral surgeons tend to utilize general anesthesia more frequently than general practitioners due to the nature of their specialties. A review of the literature shows that very few studies have been done to investigate the prevalence of general anesthesia use by general practitioners. Most of the published reports in the current literature have been done in Great Britain.

A 1981 survey in England found that 58 per cent of general practitioners utilized inhalation general anesthesia to provide dental services to a small proportion (5 per cent) of their patients.³ Another English survey in 1986 found that 38 per cent of the respondents used general anesthesia mostly in private dental offices, and 36 per cent of the general anesthetics were administered by a dental surgeon other than the one carrying out the dental procedures.⁴

A further study carried out in England found that 87 per cent of general practitioners treated general anesthesia cases, 38 per cent had more than 10 general anesthetic cases per month and 41 per cent of the anesthetics were given by another dental surgeon.⁵

The results of these surveys are contrary to the usual situation one encounters in Canada and the United States, where the majority of dental procedures performed under general anesthesia are completed in hospitals as day surgery or in-patient cases. Almost exclusively, the general anesthesia is administered by a physician or specialist in anesthesia. Very few, if any, dental practitioners in Canada and the United States administer general anesthetics without postgraduate training in anesthesia.

A 1983 Canadian report described a method of using general anesthesia in the dental operatory under the supervision of trained anesthetists. Of the patients treated, 85 per cent were apprehensive adults or children and 11 per cent required extensive or lengthy dental treatment.⁶

In the one-year period between 1986-87, 1990 dental treatments were completed under general anesthesia in Saskatchewan.⁷ This number includes only those cases where the general anesthesia was administered by a physician and procedures were performed by general practitioners as well as specialists

in pediatric dentistry and oral surgery. It does not include surgical procedures covered by Medicare (i.e., maxillofacial surgery and surgery associated with pathology), but does include exodontia done under general anesthesia. Although this number can be used to approximate the number of cases performed by general practitioners, a true representation of the number, type of procedures, and type of patients treated by general practitioners in Saskatchewan is unknown.

The purpose of this study was to investigate the utilization of general anesthesia by general practitioners for the completion of dental procedures in Saskatchewan.

Method

A three-page questionnaire which required only check mark answers was constructed to survey general practitioners about use of general anesthesia. The questionnaire was mailed to all 279 general practitioners in Saskatchewan who are exclusively in private practice. All pertinent information about the dentists was obtained from the Annual Register of the College of Dental Surgeons of Saskatchewan. Statistical analysis of the resulting data utilized the Statistical Package for the Social Sciences.⁸

Results

Of the 279 questionnaires mailed to general practitioners, 234 were returned in a valid manner, for a response rate of 83.9 per cent. As a response rate of 80 per cent is generally considered sufficient to represent the entire cross-section of a population, valid conclusions can be drawn from this survey with respect to the entire population of general practitioners in Saskatchewan.

The data obtained from the survey were compiled and the results are shown in Tables I through XI. Tables I, II and III represent the distribution of general practitioners with respect to age, year of graduation from dental school, and community population.

Table IV shows that 61.5 per cent of general practitioners had performed dental procedures under general anesthesia. These responses did not include cases during dental school training.

Table V shows the reasons given by general practitioners for not using this type of treatment. In this question, respondents were not limited to a single reason and could choose any or all of the reasons listed.

Table VI shows the number of general anesthesia cases per year among general practitioners.

TABLE I

Age Distribution

Age	Percentage of General Practitioners	
< 30	13.7	(32)
30-39	38.5	(90)
40-49	25.2	(59)
50-59	11.1	(26)
> 59	11.5	(27)
	100.0	(234)

(Absolute numbers in parentheses.)

TABLE III

Population distribution

Population	Percentage of General Practitioners	
< 5,000	15.0	(35)
5,000-100,000	31.6	(74)
> 100,000	53.4	(125)
	100.0	(234)

(Absolute numbers in parentheses.)

TABLE V

Reasons given for not doing general anesthesia cases

Reason	Percentage of General Practitioners
Lack of training	44.4
Lack of facilities	42.2
Lack of privileges	37.8
Personal preference	65.5
Other	10.0

Only practitioners (90 respondents) who had never treated general anesthesia cases were included. Multiple choices possible.

Table VII shows the types of patients treated under general anesthesia by general practitioners who utilized this treatment option. Respondents were not limited to a single response to represent the types of patients they treated.

Table VIII shows the results of a question about the adequacy of undergraduate dental education in preparing students to treat general anesthesia cases. Of the general practitioners who answered this question and had utilized general anesthesia, 60.2 per cent thought their undergraduate dental school curriculum did not adequately cover the topic.

TABLE II

Distribution by year of graduation

Year of Graduation	Percentage of General Practitioners	
< 1960	15.0	(35)
1960-69	20.5	(48)
1970-79	31.2	(73)
> 1979	33.3	(78)
	100.0	(234)

(Absolute numbers in parentheses.)

TABLE IV

Treatment of general anesthesia cases

	Percentage of General Practitioners	
Yes	61.5	(144)
No	38.5	(90)
	100.0	(234)

(Absolute numbers in parentheses.)

TABLE VI

Number of cases treated per year

Number of Cases	Percentage of General Practitioners	
None	38.5	(90)
Very few	14.1	(33)
< 5	9.0	(21)
5-10	11.1	(26)
11-20	11.1	(26)
21-30	6.4	(15)
> 30	9.8	(23)
	100.0	(234)

(Absolute numbers in parentheses.)

Tables IX and X represent the distribution of general practitioners according to age, and year of graduation with respect to the utilization of general anesthesia. Both age and year of graduation were found to be significantly ($p < 0.001$) related to whether general anesthesia cases were done by general practitioners. In both cases, older practitioners tended to use general anesthesia more than younger practitioners.

Table XI represents the relationship between community population and the utilization of general anesthesia. The community population was found to

TABLE VII

Types of patients treated

Type of Patient	Percentage of General Practitioners
Handicapped patients	63.9
Adult patients	72.2
Children	72.2
Medically compromised	37.5
Other	18.1

Only practitioners (144 respondents) who had done at least one general anesthesia case were included. Multiple choices possible. Adult and children responses may include behavior management, handicapped and medically compromised cases.

be significantly ($p < 0.001$) related to whether a general practitioner utilized general anesthesia. General practitioners in the largest population group ($> 100,000$ people) utilized anesthesia less than those in smaller communities ($< 100,000$).

Of the general practitioners who had performed dental procedures under general anesthesia (144), 62.5 per cent did both restorative dentistry and oral surgery on such patients, while 34.8 per cent did only oral surgery.

With respect to complications encountered by patients under general anesthesia, 14.3 per cent of general practitioners had patients who experienced varying degrees of complications, ranging from simple complications (nausea, vomiting) to death of the patient.

Of practitioners who had used or still use general anesthesia, 33.6 per cent indicated they had used this procedure in a non-hospital setting. The majority stated they had used an outpatient general anesthesia suite and not a private dental office.

Discussion

In this survey of Saskatchewan general practitioners, 61.5 per cent of the respondents had treated at least one patient under general anesthesia during their careers. With respect to current utilization in this province, 38.4 per cent (90) indicated that they used general anesthesia for at least five cases per year. These results are similar to those of previous surveys.^{1,5}

The most common reason given for not using general anesthesia was personal preference. General anesthesia cases can be stressful, not financially lucrative (especially if the practice is left vacant while using other facilities), and time-

TABLE VIII

Dental school training

	Percentage of General Practitioners	
Very adequate	1.5	(2)
Adequate	38.3	(51)
Inadequate	44.4	(59)
Very inadequate	15.8	(21)
	100.0	(133)

(Absolute numbers in parentheses.)
Only practitioners who had done at least one such case in the past were included.

consuming. Extra time usually has to be spent doing pre-anesthetic workups, completing the medical record and dictating the operative procedures. Other reasons such as lack of training, facilities and hospital privileges were chosen with about the same frequency (40 per cent).

With respect to the number of cases done per year by general practitioners, 38.5 per cent of respondents had never done such cases while 14.1 per cent had in the past but did very few currently. On the other extreme, 9.8 per cent of respondents estimated they had performed more than 30 such procedures per year. This number is much lower than the results of an English study in 1978 which showed that 33 per cent of practitioners did more than 10 general anesthetic cases per month. In Saskatchewan, at the most, some practitioners (9.8 per cent) do three or more cases per month. These differences between practitioners in Saskatchewan and England could be due to undergraduate training, availability of facilities, population differences and preferences, and systems of providing dental care. The difference could also be philosophical in nature. The Canadian approach to patient care may be more conservative in terms of how treatment is delivered. The majority of Canadian patients may expect to receive dental care in a private office setting and would not accept general anesthesia as a treatment modality for the delivery of routine dental care.

Upon analysis of the types of patients treated utilizing general anesthesia, it was found that 72.2 per cent of the general practitioners treated adults and 72.2 per cent also treated children. A large group (63.9 per cent) treated handicapped patients under general anesthesia. These patients are most often mentioned as candidates for general anesthesia use.^{1,2}

TABLE IX

Effect of age on utilization of general anesthesia

Age	Cases Treated?	
	Yes (%)	No (%)
< 30	34.4	65.6
30-39	57.8	42.2
40-49	61.0	39.0
50-59	76.9	23.1
> 59	92.6	7.4

Calculated $\chi^2 = 24.12$ which is significant at 0.001 level for 4 degrees of freedom.

TABLE X

Effect of year of graduation on utilization of general anesthesia

Year of Graduation	Cases Treated?	
	Yes (%)	No (%)
< 1960	85.7	14.3
1960-69	75.0	25.0
1970-79	58.9	41.1
> 1979	44.9	55.1

Calculated $\chi^2 = 21.69$ which is significant at 0.001 level for 3 degrees of freedom.

TABLE XI

Effect of population upon utilization of general anesthesia

Population	Cases Treated?	
	Yes (%)	No (%)
< 5,000	71.4	28.6
5,000-100,000	82.4	17.6
> 100,000	46.4	53.6

Calculated $\chi^2 = 27.20$ which is significant at 0.001 level for 2 degrees of freedom.

With respect to dental school training, 60.2 per cent of respondents who had used general anesthesia thought their dental school curriculum did not adequately cover the topic. These results are based on empirical responses and the individual interpretation of adequate training.

In the analysis of the responses, both age and year of graduation were found to be significantly ($p < 0.001$) related to whether general anesthesia was utilized

by general practitioners. Older practitioners tended to have used or are using it more than younger practitioners. These results could be a reflection of the ability of general practitioners to obtain hospital privileges. In the larger communities, most hospitals have a full staff, which makes it very difficult for new graduates to obtain privileges and to perform treatment under general anesthesia. As a result, the dentists with privileges in these larger communities tend to be older, more established and tend to do the majority of general anesthesia cases in the community. In smaller urban communities in Saskatchewan, the competition for privileges may not be as great as in the cities.

The community population was found to be significantly ($p < 0.001$) related to whether a general practitioner utilized general anesthesia or not. In the largest population group ($> 100,000$) fewer practitioners utilized general anesthesia. Practitioners in smaller communities may be able to get hospital privileges easier than those in cities, where competition is greater, especially in large primary acute-care hospitals. Other factors that may influence this relationship are: waiting lists for hospitals in smaller communities may be shorter, making the provision of care quicker and more feasible, and people in smaller communities may not want to be referred out of the community for treatment.

This paper did not investigate the public demand or needs for dental treatment under anesthesia. A further study could investigate the extent of public needs or demand for such services and the degree of adequacy with which these are currently being met by dentists in practice. If there is a discrepancy between the patient needs and services provided, dental schools may have to increase curriculum time on the utilization of general anesthesia.

Conclusions

This survey shows that general practitioners in Saskatchewan provide a significant amount of dental treatment through the use of general anesthesia. Currently, 38.4 per cent of the respondents indicated that they did at least five dental cases under general anesthesia per year. Age of practitioner, year of graduation and community population were found to be significant variables in the utilization of general anesthesia by general practitioners in Saskatchewan. Δ

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Rapport de cas: Réaction à l'anesthésie locale

Le Dr François Blondeau
Québec, Qué.

RÉSUMÉ

Une jeune patiente a été référée pour ligaturer une dent incluse^{1,3} au maxillaire supérieur droit. Suite à l'injection d'anesthésie locale un blanchiment de l'épiderme est noté.

La physiopathologie sous-jacente à ce phénomène est expliquée ainsi que les différentes hypothèses possible. L'utilisation de différents types de seringues est également discutée.

ABSTRACT

A young female patient is referred to the oral surgery clinic to ligate an impacted upper canine. Shortly following injection, whitening of the skin is noted.

The physiopathology is explained according to different hypothesis. The use of different types of syringes is also discussed.

Cas clinique

Cette jeune patiente de 16 ans est référée par son orthodontiste à la clinique de chirurgie buccale et maxillo-faciale de notre centre hospitalier pour ligaturer la dent #13 incluse. Considérant la situation anatomique de la dent, nous procédons à un bloc du nerf sous-orbitaire avec de la carbocaïne et néo-cobéfrine (1:20,000) en quantité totale de 1.8 cc. Une seringue à harpon est utilisée pour injecter la solution anesthésique. Pendant l'injection, plusieurs aspirations sont faites sans retour sanguin en aucun temps. Une injection palatine complète l'anesthésie (0.2 cc.).

Environ 20 secondes après l'anesthésie, un blanchiment de la portion cutanée de la joue de la patiente est noté à mi-



chemin entre la lèvre supérieure et le rebord orbitaire inférieur sur la joue droite. La géographie du territoire délimité par ce blanchiment ressemble curieusement à un petit coeur; une photographie est prise à ce moment.

La patiente est asymptomatique, sauf pour la progression de l'anesthésie du territoire desservi par le nerf sous-orbitaire. Elle est réassurée et la chirurgie effectuée selon le plan initial prévu.

Discussion

Ce type de réaction n'est pas inhabituel chez le dentiste. Tous ont sûrement constaté ce blanchiment des tissus mous du visage lors d'infiltrations et de blocs anesthésiques.

Une injection intra-vasculaire artérielle ou un vaso-spasme par traumatisme mécanique à la paroi du vaisseau sont les mécanismes probablement responsables de cette réaction. Le résultat final de vasoconstriction serait analogue à celui noté dans les désordres artériels périphériques (Raynaud, acrocyanose)¹.

Quelque soit le mécanisme responsable, la couleur blanche de l'épiderme serait secondaire à une anoxie cutanée partielle induite par une diminution du flot artériel local. Il n'y a en général pas de séquelle à ce phénomène, mais une

nécrose cutanée est théoriquement possible et le patient devrait en être informé.

Chez notre patiente, l'utilisation d'une seringue à harpon sans aspiration positive milite plus en faveur du mécanisme de vasospasme que de l'injection intra-artérielle.

Kronman² rapportait récemment un mécanisme neuronal pour expliquer la cause de ce phénomène. Son explication implique une stimulation du plexus sympathique péri-artériel venant du plexus cervical sympathique. Cette hypothèse rejoint celle du vasospasme d'origine traumatique. Certaines réactions similaires peuvent être également dues à une injection intra-vasculaire. Le type de seringue utilisée devient donc important. À cet égard, la seringue auto-aspirante est reconnue comme étant de nature plus erratique dans la positivité de l'aspiration³.

De fait, les résultats de cette dernière étude de Turcotte démontrent que des aspirations positives sont survenues à des pressions intra-luminale de 30 et de 8 mm de Hg, alors qu'aucune aspiration n'a été notée à des pressions intra-vasculaires de 25, 20, 15, 10, 4, et de 2 mm de HG pour la seringue auto-aspirante. La pression intra-artérielle moyenne pour les vaisseaux du visage est d'environ 80-90 mm. de Hg. La pression intra-veineuse est d'environ 10-12 mm Hg.

De toute façon, l'important est bien d'éliminer l'injection intra-vasculaire, surtout veineuse, mais aussi artérielle afin d'éviter les complications péri-anesthésiques.

Ici, le mécanisme possible est donc un vaso-spasme, tel que noté dans la maladie de Raynaud, causé par une contraction de la paroi musculaire (média) artérielle. Cette contraction serait initiée par la stimulation de l'aiguille directement sur la paroi, mais aussi possiblement par la

stimulation du plexus sympathique péri-artériel, tel que discuté par Kronman.

L'injection intra-vasculaire de substance vaso-constrictive est aussi un mécanisme probable dans certains cas, surtout avec la seringue dite auto-aspirante.

Le résultat est donc une diminution ou une cessation du flot sanguin dans le territoire impliqué, se traduisant en clinique par un blanchiment de la portion cutanée desservie par ce vaisseau.

Nous avons donc rapporté ce cas à cause de la forme intéressante du blanchiment, mais aussi afin de sensibiliser les praticiens à la nécessité de toujours utiliser une technique d'anesthésie qui soit basée sur des principes rigoureux et des fondements physiopathologiques stricts. L'utilisation d'une seringue à harpon est également recommandée. Δ

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Each Fellow will commit his/her time fully to research training and related activities at McMaster University. The length of the Fellowship is negotiable to a maximum of two years.

Stipends will depend on qualifications and experience and will be similar to those offered by national funding agencies.

Deadline for application for the
Fellowships beginning July 1, 1990 is:

FEBRUARY 15, 1990

To obtain an application form write to:

Fellowship Committee
The R. Samuel McLaughlin Centre
for Gerontological Health Research
McMaster University
Faculty of Health Sciences
P.O. Box 2000, Station 'A'
Hamilton, Ontario L8N 3Z5

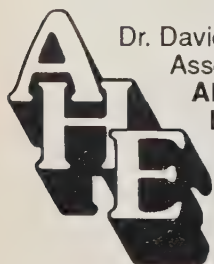
DENTIST

Due to the retirement of our Dentist in December, we are seeking an experienced, outgoing dentist to provide dental service to psychiatric patients in a pleasant work environment.

Alberta Hospital Edmonton, is a 648 bed, fully accredited, teaching, university affiliated psychiatric treatment centre offering clinical programs in acute care, forensic, rehabilitation and geriatric psychiatry.

Reporting to the Associate Executive Director Clinical, you will be responsible for providing a wide range of service, supervision of a dental assistant and the on-going maintenance of our present prevention program.

If you are licenced to practice dentistry in Alberta, with related experience, you are invited to submit your resume, indicating salary expectations and date available, to:



Dr. David R. Cornish
Associate Executive Director, Clinical
Alberta Hospital Edmonton
Box 307
Edmonton, Alberta
Canada T5J 2J7
Tel: (403) 472-5439



THE UNIVERSITY OF MANITOBA

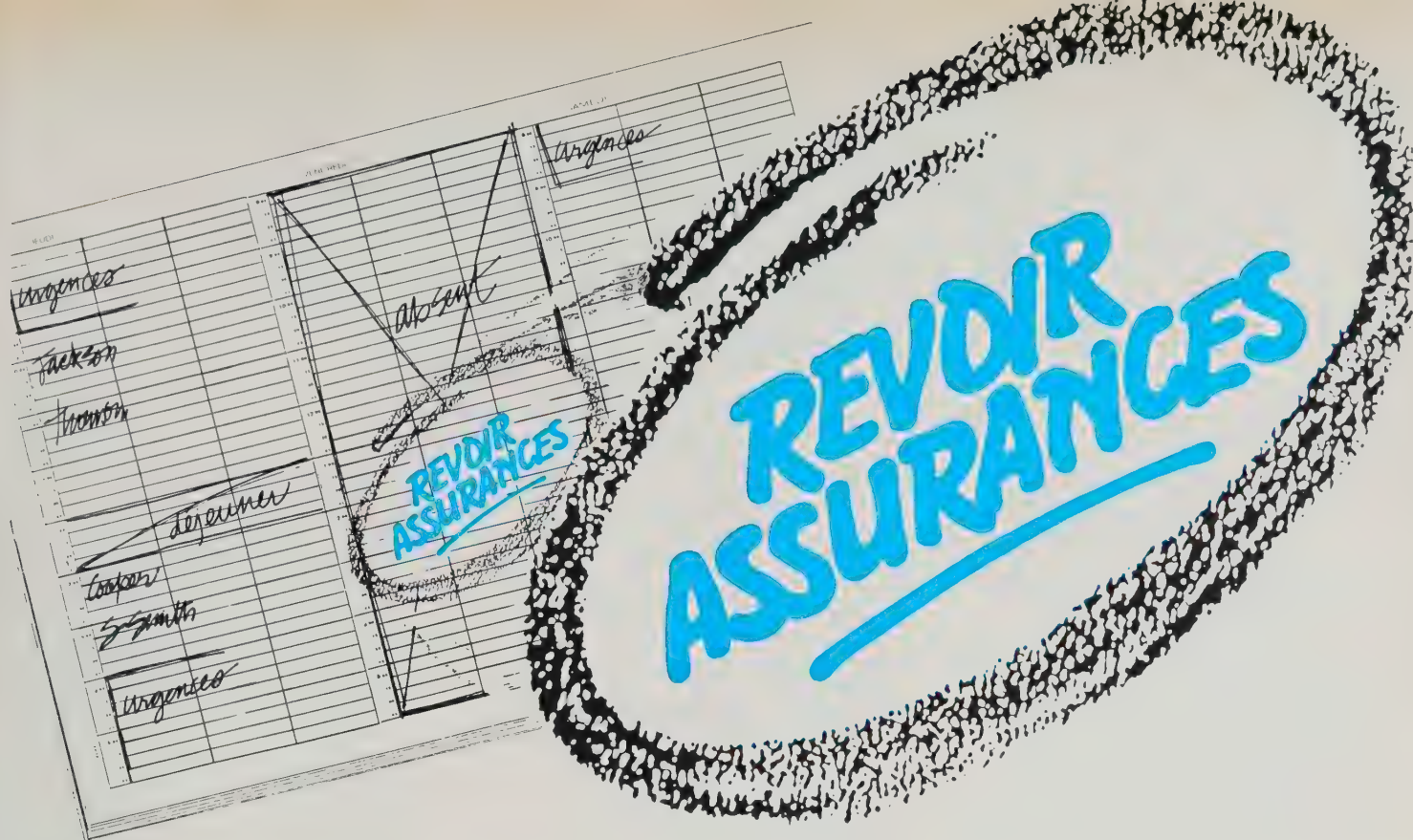
The Department of Preventive Dental Science invites applications for a full-time, tenure-track position in the Section of Pediatric Dentistry.

Responsibilities will include administration of the Section of Pedodontics, and didactic, preclinical and clinical teaching at the undergraduate and graduate level in pediatric dentistry and dentistry for the disabled. Responsibilities will also include the development of an original research program. Advanced degree and research experience are desirable. Private Practice privileges, one day per week are available, intra- or extra-murally. Applicants must be graduates of a CDA/ADA approved specialty training program in pediatric dentistry with specialty licensure or eligibility for specialty licensure in Manitoba. Salary and rank commensurate with qualifications and experience. Both men and women are encouraged to apply. Canadian citizens and permanent residents will be given priority in accordance with immigration requirements.

Send curriculum vitae to:

Dean A. Milnes
Department of Preventive Dental Science
Faculty of Dentistry
University of Manitoba
780 Bannatyne Avenue
Winnipeg, Manitoba
Canada, R3E 0W2

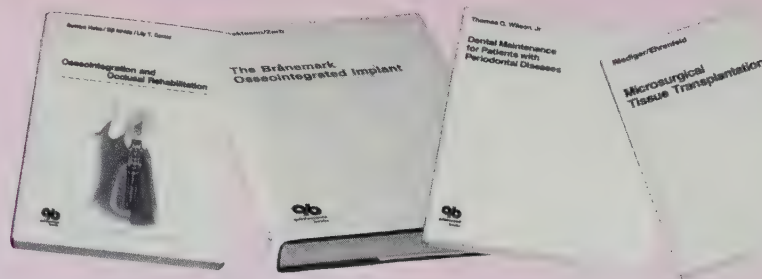
Deadline for applications is January 1, 1990.



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International leaders in osseointegration give updates on their research into the Brånemark implant.
263 pp; 357 illus (237 in color); \$128
- ☐ **Mongini/Schmid**
Craniomandibular and TMJ Orthopedics
Text and case histories detail approaches to problems in gnatho-orthopedics that ensue from occlusion, TMJ function, and craniofacial musculature.
208 pp; 491 illus; \$54
- ☐ **O'Brien (ed)**
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603 pp; 224 illus; \$68
- ☐ **Trowbridge/Emling**
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- ☐ **Hegenbarth**
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- ☐ **Wilson**
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Much-needed guide on how to improve patient compliance. Shows how to *successfully* maintain dental health in patients who have periodontal diseases. Describes care in other areas of dentistry and how they interrelate with periodontics.
224 pp; 345 illus (132 in color); \$64
- ☐ **Croser/Chipping**
Cross Infection Control in General Dental Practice
Written for the entire dental team. Clearly sets forth guidelines on determining and implementing procedures to control cross infection in the dental office.
128 pp; 25 illus; \$32
- ☐ **Martignoni/Schönenberger**
Precision Fixed Prosthodontics: Clinical and Laboratory Aspects
Comprehensive text on techniques for fabricating precise crown-and-bridgework. Provides a method of standardizing the clinical process; gives detailed laboratory procedures.
580 pp; 1,384 illus (most in color); \$178
- ☐ **van der Linden**
Problems and Procedures in Dentofacial Orthopedics
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December/Décembre 1989

December 8-10: 13th Annual Session and Scientific Meeting of the Association for Dental Sciences of the Republic of China in Tainan, Taiwan. Contact: Dr. Chin-Kuang Wen, 7F, No. 120, Sec. 2, Chung Hsiao E Rd, Taipei, Taiwan. Tel: 3965390-1.

December 14-16: The Dental Association of Thailand Contact Col Amnarj Dhammajinda, Secretary General, The Dental Association of Thailand, 12 Soi Prasanmitr, Sukhumvit 23, Bangkok 10110, Thailand. Tel: 258-9251.

December 27-30: 44th Indian Dental Conference in Calcutta. For details write: Dr. K.L. Banerjee, Conference Secretariat, Dr. R. Ahmed Dental College & Hospital, 114, Acharya, J.C. Bose Rd, Calcutta - 700 014 India.

January/Janvier 1990

January 14-20: Midwinter Dental Meeting of the Barbados Dental Association in Bridgetown. Contact: Mrs. Alison Hoad, Gardiner Austin Travel, Ridge House, Cavan Lanes, Bridgetown, Barbados.

January 17-21: Yankee Dental Congress Gateway to the Future in Boston, Mass. Contact: Massachusetts Dental Society, 83 Speen St, Natick, MA 01760-4125, USA, or tel: (508) 651-7511.

January 20-25: XIV Congresso Paulista de Odontologia, XXVIII Seminario Odontologico Latino-Americano, II Congresso Universitario Paulista de Odontologia in Brazil. Contact: Dr. Joao Vieira de Moraes, President, Associacao Paulista dos Cirurgioes Dentistas, Rue Humaita, 389 - Bela Vista C.P. 2523, CEP 01321 Sao Paulo, Brazil. Tel: 37-4194.

January 20-27: 24th International Alpine Dental Conference in Courchevel, France. Contact: LW Bryer, 24 Cadogan Square, London, SW1X 0JP, England.

January 20-27: XXIII Congreso de FOCAP in Atlapa, Panama. Contact: Dr. Ricardo Arango, president, XXIII Congreso internacional de FOCAP, PO Box 6777, Panama 5, Panama.

January 24-27: First World Endodontic Congress in Mexico City. Contact: Dr Jose Oynick, Prado Sur 480, Lomas Virreyes, Mexico 11000 DF, Mexico.

January 26-28: I International Dominican Congress of Pediatric Dentistry, II Congress of the Ibero-American Association of Pediatric Dentistry, V Dominican Congress of Pediatric Dentistry in Santo Domingo, Dominican Republic. Contact: Centre of Pediatric Dentistry, PO Box 2753, Santo Domingo, Dominican Republic or tel: (809) 689-4277.

February/Février 1990

February 1-3: Miami Winter Meeting For more information, contact: East Coast District Dental Society, 420 S Dixie Hwy, 2-E, Coral Gables, FL 33146, USA. (305) 667-3647.

February 11-14: 125th Midwinter Meeting of the Chicago Dental Society. Contact: Chicago Dental Society, 401 N Michigan Ave, Chicago, IL 60611, USA.

February 18-22: Annual Scientific Convention of the Dental Association of Trinidad and Tobago. Contact: The Honourary Secretary, 115 Abercromby St, Port-of-Spain, Trinidad and Tobago.

February 24-March 3: Virgin Islands Dental Association Convention in St. Thomas. For convention pre-registration, travel and accommodation at group rates, please contact: Dr. Bob Brandon at (519) 657-3368.

March/Mars 1990

March 7-11: International Association for Dental Research in Cincinnati, Ohio. Contact: Ms. Judith A. Gauchel, Scientific Program/Meeting Mgr, 1111-14th St NW, Suite 1000, Washington, DC 20005 USA. Tel: (202) 898-1050.

March 8-9: The 9th Jordanian Dental Congress in Amman. Contact: Dr. Irfan Sultan, Chairman, Scientific Committee, PO Box 1326, Amman, Jordan.

March 14-16: The 4th World Dental Congress of the Egyptian Clinical Dental Society in Cairo. Contact: Prof. Avd Elahdi Nasif Selim, College of Dentistry, Cairo University, Cairo, Egypt.

March 24-31: 25th International Alpine Dental Conference in Courchevel, France. Contact: LW Bryer, 24 Cadogan Square, London, SW1X 0JP, England.

March 26-30: Hawaiian Symposium on Endodontics & Periodontics sponsored by the Alberta Academy of General Dentistry and the Edmonton Multidisciplinary Dental Study Club. Contact: Dr. Eugene Dalla Lana, 206-1305-11 Avenue SW, Calgary, AB T3C 3P6 or tel: (403) 244-4867.

March 28-30: Big Apple New York Dental Meeting. Contact Dr. Leslie Zucker, 3201 Grand Concourse, Bronx NY 10468, USA.

March 28-31: Annual Dental Meeting of the Finnish Dental Society in Finland. Contact: Taru Ohtola, Training Mgr, Committee for Continuing Education, Akavatalo, Rautatietäisenkatu 6 SF-00520 Helsinki, Finland.

March 31-April 6: Annual Meeting of the Canadian Association of Oral and Maxillofacial Surgeons in Whistler, BC. ORAL IMPLANTS - Trouble shooting for successful attached prosthesis. Contact: Dr. Mike Kaburda, 208-600 Royal Ave, New Westminster, BC V3M 1J3.

April/Avril 1990

April 1-6: VIth World Congress on Pain in Adelaide, Australia. For information: International Association for the Study of Pain, 909 NE 43rd St, Suite 306, Seattle, WA 98105-6020 USA. (206) 547-6409.

April 25-29: American Association of Endodontists. For more information, contact: Ms. Irma S. Kudo, 211 E Chicago Ave, Suite 1501, Chicago, IL 60611, USA.

May/Mai 1990

May 3-5: ODA Annual Spring Meeting to be held at the Metro Toronto Convention Centre is looking for

clinicians. All members of the dental team are invited to participate and share their expertise. For an application form, please contact: Diana Thorneycroft, ODA, 234 St. George St, Toronto, ONT M5R 2P1.

May 16-19: International Dental Congress of the British Dental Association at Barbican Centre in London. Contact: British Dental Association, 64 Wimpole St, London W1M 8A1, England or tel 01 935 0875.

May 16-19: 3rd North Sea Conference on Periodontology in Maastricht, The Netherlands sponsored by the British, Dutch and Scandinavian Societies of Periodontology. For more information, contact: Dutch Society of Periodontology, PO Box 24, 9649 ZG Muntendam, The Netherlands.

May 17-19: Congrès de la Société Suisse d'Odontostomatologie SSO in Montreux, Switzerland. Contact: D^r Pierre Spahn, 51 av du Casino, CH-1820 Montreux, Switzerland.

May 20-24: Les Journées dentaires du Québec in Montréal. Contact: Chantal Bally, 625 boul René-Lévesque ouest, Montréal, Qué H3J 1Y2.

May 28-31: The Impact of Lasers on Dental Science in Paris, France. Contact: Lasers 1990 Scientific Secretariat, Faculté de Chirurgie dentaire, 1 rue M. Arnoux, F-92120 Montrouge, France.

June/Juin 1990

June 2-4: XI^{èmes} Journées françaises de Parodontologie in Cannes, France. Contact: Dr. Catherine Mattout, 21 rue Sylvelabelle, 13006 Marseille, France.

June 19-22: 96th Annual Meeting of the American Dental Society of Europe in St. Andrews, Scotland. Contact: Dr. Clive Debenham, American Dental Society of Europe, 1 Harley St, London W1N 1DA, England.

July/Juillet 1990

July 2-5: International Association of Oral Pathologists in Tokyo. For information, contact: Dr. W.H. Binnie, Baylor College of Dentistry, 3302 Gastor Ave, Dallas TX 75246, USA.

July 11-14: 37th Annual Congress of the European Organization for Caries Research in Ljubljana, Yugoslavia. For details, contact: Dr. V. Vrbic, University Klicny Ctr. Ljubljana, Mrvatski TRG 6, Y-61000, Ljubljana, Yugoslavia.

August/Août 1990

August 24-28: 15th Biennial Conference of the New Zealand Dental Association in Dunedin, New Zealand. For information, contact: Conference Secretary, PO Box 647, Dunedin, New Zealand.

August 25-28: Congress of the Association of Dental Education in Europe in Budapest, Hungary. For details, contact: Prof. Jolan Banoczy, Mikszath K ter 5, H-1088 Budapest, Hungary.

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JOURNAL

Offices and Practices

BRITISH COLUMBIA: FRASER VALLEY DENTAL PRACTICE FOR SALE. This well-established Mission practice is less than an hour's drive from Vancouver, yet just minutes away from the great outdoors. Located in one of the fastest growing communities in BC, it offers guaranteed growth and profitability. It also provides excellent collegial and hospital support from the local community. Our office is centrally located with lots of bright windows and excellent equipment. Present dentist is pleased to offer support in guaranteeing a smooth transition. Would like to sell quickly, so are open to negotiation. Don't miss out on this excellent opportunity! Contact: Mike Nicholls at (604) 826-4815, 852-3602 or 852-5067.

BRITISH COLUMBIA: In the scenic south central interior, a short three-hour drive from Vancouver. A well-established, private family practice for sale offering professional satisfaction and sound investment opportunity. Computerization under way; independent evaluation available; opportunity for investment in dental building; will associate to ensure smooth transition. Ideal family community with excellent year-round recreation. Please reply to CDA Box 2468.

BRITISH COLUMBIA: ESTATE SALE. Opportunity presents to ambitious dentist for instant six figure net income. Sound and viable practice in a community renowned for skiing and summer recreational activities in Fernie, BC in the heart of the Rockies. Contact the law firm of Sliva & Summers, PO Box 490, Fernie, BC V0B 1M0 or phone (604) 423-4446.

BRITISH COLUMBIA—Chilliwack: 30 year old active, quality family practice for sale. 100 km east of Vancouver in the scenic Fraser Valley. Owner wishes early retirement. Can assist with smooth transition. Exceptional opportunity for experienced dentist or two new graduates. Call (604) 792-6616 (O) or 858-6027 (H).

BRITISH COLUMBIA—Gold River, Vancouver, Island: Well-established,

3-operator office for sale. All adjuncts including panorex and cephalometric. Extremely busy with corresponding gross income. Town is in the midst of well-founded expansion auguring well for the future. Reply to CDA Box 2467.

BRITISH COLUMBIA—New Westminster: Well-established, adult practice in excellent med/dent building. Two operatories, laboratory, private office, store-room. Large recall system. 25 minutes from Vancouver. Call office Mon, Tues or Thurs at (604) 522-1911 or home anytime at (604) 521-8620.

BRITISH COLUMBIA—Terrace: 16-year-old general practice for sale. Retiring. 1300 sq ft, three operatories, one newly equipped, 4th operatory plumbed. Outstanding recreation in the area. Professionally appraised. Call (604) 635-6016 office 635-5580 Home.

BRITISH COLUMBIA—Vancouver: Enjoy the great West Coast lifestyle! Very busy, growing family practice for sale. High gross, 28 hour work week, shared office for great net. 3 modern, equipped operatories, with ceiling tv's, Exan computer system for 5 years. Not inexpensive, but worth it! Serious calls only please. (604) 732-0944.

BRITISH COLUMBIA—Vancouver: Space for lease. Dentist — Dental Specialists. Vancouver Centre — truly the heart of the downtown core, in a triple A building, the Scotia Tower, next to the sky train route. Medical/Dental floor already leased for general dentistry, pediatric dentistry, oral and maxillo-facial surgery, orthodontics, part-time periodontist and physicians. Please contact Gene Cherneski at (604) 684-7537 for leasing information.

BRITISH COLUMBIA—Vancouver Suburb: Practice for Sale. Busy, family practice established more than 15 years. Attractive office, recently relocated to new building with good exposure, 3 ops of new equipment. Principal dentist and one associate. Well-organized office, very experienced staff who completely manage the practice. Phone: (604) 531-5222.

BRITISH COLUMBIA—Victoria: Prestigious medical/dental office building.

Rental space available, two operatories fully-equipped. Common waiting room and x-ray. Share with three other dentists. Available immediately. Please call (604) 383-1851 or (604) 388-7412 daytime.

BRITISH COLUMBIA—Victoria Island: GROUP PRACTICE OPPORTUNITY One position available for purchase in highly-successful 4 doctor group. Family-oriented, established 10 years. Unique management company arrangement providing synergistic support combined with individual doctor freedom not otherwise possible. CGA business manager heads up team-oriented, well-trained support staff with organizational systems and procedures in place, leaving doctors free to practise areas of dentistry preferred. Smooth transition into existing patient flow provided. Contact: Dr. Allan McIntosh, 3180 Barons Rd., Nanaimo, BC V9T 4B5 ph (604) 758-1783 bus, (604) 758-7860 res.

ALBERTA—Edmonton: Practice for Sale. Excellent opportunity for established dentists or new graduates. Modern, 5-operator general practice located in downtown professional building. Owner returning to school. Phone (403) 465-5035 or 467-6887 after 6 pm.

ALBERTA—Hythe: Dentist wanted for fully-equipped clinic located in northern Alberta between the cities of Dawson Creek and Grande Prairie. Excellent skiing and fishing and a full range of community facilities. Town has new hospital. Two doctors and drugstore share building. Practice volume is 3-4 days per week. For complete information contact: Jacqueline Lee, Box 280, Hythe, AB T0H 2C0. Telephone (403) 354-8255 (res).

ALBERTA—Red Deer: Practice premises for sale. Owner relocating in same city. Leaseholds and some equipment available in a 10-year-old mall. 1380 sq ft; 5 operatories. Excellent location. Contact B. Fleming at (403) 346-8443.

ALBERTA—Rocky Mountain House: For sale. Long-established, active, solo family practice. Main street, ground floor location. Three operatories, one newly-equipped. Located growing, progressive

community, easy access to major cities. Outstanding recreational opportunities in area. Professional appraisal available. Owner retiring. Contact (403) 845-3133 office or (403) 845-3455 home.

SASKATCHEWAN: Very busy, family-oriented practice for sale or associateship leading to purchase in small Saskatchewan city. Four fully-equipped operatories, including panelipse. Large patient base makes it suitable for 2 new graduates or 1 experienced dentist. Very reasonable selling price. Reply to CDA Box 2420.

MANITOBA—Winnipeg: Well-established, busy practice for sale. High gross, low overhead. Excellent downtown location. Newly decorated operatories. Third party assessment done. Please write to PO Box 25124 c/o 1650 Main St, WPG, Man R2V 4C7.

ONTARIO: Just east of Toronto — long-established family practice for sale. Owner contemplating retirement. Approx. 1200 sq ft in professional bldg, 2 ops completely equipped — two more plumbed/wired. Please contact CDA Box 2466.

ONTARIO: Busy, established, family practice for sale in small town near Lake Huron. Modern 30' x 50' building, air conditioned, two well-equipped operatories. Reception and business areas, lab, kitchen, bathroom, private office and staff room (or third operatory). Very competent, well-trained staff available with practice. Excellent income, low overhead. Please call (519) 482-5864.

ONTARIO—Hamilton: New, modern office in rapidly growing area. Presently used as office for MD. Lots of free parking. Excellent lease terms. Spacious 1200 sq ft with 4 available rooms all plumbed. Available after January 1990. Phone (416) 574-1212.

ONTARIO—Ottawa: Attractive, fast-growing practice for sale. Excellent location in busy shopping plaza with high visibility. 1350 sq ft, 2 full operatories, panorex, 3rd operatory plumbed and N₂O₂ available. IV sedation in use. Growing crown and bridge. 90 per cent insurance. Tel: (613) 523-5701 (home).

ONTARIO—Toronto: Space available to GP or Specialist — cost sharing setting in a new practice in the Yonge-Eglinton area. Daytime (416) 322-6862. Evenings (416) 764-6681.

QUÉBEC—St-Lambert: Do you have many referrals from the South Shore? Are you looking or thinking of setting up a satellite or permanent practice on the South Shore? Don't invest any capital; I have a complete, modern, new set-up. If you are interested, call Dr. Paul Tabakman at (514) 671-1217 or (514) 247-3193 residence.

QUÉBEC—Shawinigan: Bureau avec 2 salles opératoires complètement équipées. Ce bureau est en excellent condition. Très bon achalandage et beaucoup de dossiers. Peut-être transféré immédiatement. Tél (819) 535-1333 ou (819) 568-9195.

NEW BRUNSWICK: Busy, growing family practice for sale. Newly renovated office, two operatories, plumbed for third. Planmeca pan with capability for ceph, electrosurg, new Dent-X processor, N₂O. Hospital privileges available nearby for restorative dentistry or surgery under general anesthetic. Super opportunity to practice all aspects of modern dentistry a thriving smaller city — perfect area for a sports-minded individual or family. Reply to CDA Box 2469.

NOVA SCOTIA—South Shore: Established practice (17 years) for sale in modern facility. For further details, phone (902) 634-8880 or write Dr. Robert Murray, Lunenburg Medical/Dental Centre, PO Box 370, Lunenburg, NS B0J 2C0.

NOVA SCOTIA—Sackville: Situated 20 minutes from Halifax in enclosed mall in developing suburban area. 3-year-old practice with good rent & lease arrangements. Excellent new patient flow and 1700 active patients. Dentist wishing to consolidate effort in other existing practice. Priced for immediate sale. (902) 466-5484.

Associateships Available

YUKON—Whitehorse: Associate required for a very busy multidiscipline dental practice. Excellent opportunity for a young progressive dentist. Contact Dr. R. Pearson (403) 668-3152.

BRITISH COLUMBIA: "New State of the Art" private practice located in Vancouver's newest and most exciting mall is looking for a very special associate. Video imaging, ultra-modern equipment, extended hours — we have it all! Call City Square

Dental Care at (604) 876-4537 if you would like to be on our team.

BRITISH COLUMBIA: Excellent opportunity available in Vancouver, BC. ASSOCIATE wanted for busy oral and maxillofacial practice. Area offers skiing, hiking, boating, fishing and a mild climate. Please write giving full background to CDA Box 2461.

BRITISH COLUMBIA—Duncan: Full-time associate required for flourishing, well-established group practice to assume patients of retired partner. Opportunity for future partnership. Hospital privileges available. Experience preferred. Duncan is located 40 minutes from Victoria in the scenic Cowichan Valley where recreational opportunities abound — boating, skiing at Mt. Washington, outdoors activities, golfing. Contact Dr. Chilibeck or Wang at (604) 748-8141.

BRITISH COLUMBIA—Thompson-Okanagan Region: ASSOCIATE REQUIRED. Exceptional opportunity for full- or part-time associate in busy, quality practice established 10 years. Contact: Dr. Barry R. Goldberg or Rita Barten, Box 188, Lillooet, BC V0K 1V0 or phone: (604) 256-4616 8 am to 5:30 pm or (604) 256-7162 after 5:30 pm.

BRITISH COLUMBIA—Vancouver: PEDIATRIC ASSOCIATE required for busy quality practice. Opportunity for partnership possible. Please reply in confidence to CDA Box 2444.

BRITISH COLUMBIA—Williams Lake: Full-time Associate Wanted. Busy, well-equipped family practice with good support staff including hygienists. Phone — Alistair Menzies (O) (604) 398-7161 or (H) 392-2615 collect.

ALBERTA—Calgary: Quality associateship available January 1. Excellent opportunity in established practice. New 2500 sq ft location only 1½ year old. Present associate leaving end of December. Potential buy-in for right person. (403) 281-4266 or 256-4265.

ALBERTA—Edmonton: Full-time associate required for busy mall practice. Well-equipped with 3 full operatories and pan. Excellent opportunity for new graduate or established practitioner. Partnership opportunity. Reply to: Dr. J.H. Haymour (403) 474-4887.

ONTARIO—Ottawa: Associateship available in a modern dental centre. Initial

part-time increasing to full-time in spring of 1990. Definite partnership possibilities available. Call Dr. Alan Bridges (613) 225-4208.

ONTARIO—Ottawa: High-gross, well-established, adult-oriented practice needs a conscientious associate with buy-in opportunity due to semi-retirement plans. New equipment, office, 3 operatories, pan in a prestigious ground floor centre town location. Motivated, congenial, efficient staff. Dr. W. Shewchuk (613) 833-2829 evenings.

ONTARIO—Ottawa: Experienced dentist to associate in well-established general practice. Option to purchase to be included in associateship agreement. Excellent opportunity for right person. Reply to CDA Box 2460.

ONTARIO—Sudbury: Full-time associate required to practice between 2 offices. One storefront with 2 optometrists and 2 veterinarians, the other in a medical/dental building with a library, pharmacy and medical doctor. Am the only dentist servicing about 5000 people. 40-60 per cent associate percentage offered. Call (705) 522-4252.

ONTARIO—Toronto: Oral and Maxillo-facial Surgeon wanted to associate with view to a partnership in group practice. Reply in confidence to CDA Box 2417.

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Advertiser's Index

Alberta Hospital Edmonton	916
The Arnoldi Group Ltd.	884
Aurum Ceramic Dental Laboratories Ltd.	886
John O. Butler Company	862
Bytown Group Inc.	907
CDSPI.	867, 902, 908, 917
The L.D. Caulk Company of Canada	IBC
Chicago Dental Society	882
City of Toronto	908
Comlite	878
CUSO	896
Den-Mat Corporation	OBC
Dental Power	907
Eurodent International of America	IFC
Hoechst, Inc.	872
Interplak	891
Listerine	868, 869, 870
The R. Samuel McLaughlin Centre for Gerontological Health Research	916
Nobelpharma, Inc.	846, 892
Ontario Ministry of Health	902
Procter and Gamble, Inc.	844
Progressive Solutions	896
Quintessence Publishing Company, Inc.	918
Sci-Can	875
Staedtler-Mars Ltd.	880
Teledyne WaterPik Canada Ltd.	876, 877
University of Manitoba	896, 916
Valudent	873
Warner Lambert Canada, Inc. (Trident)	885

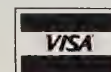


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Scientific Articles:

are contributions dealing with research, diagnosis and treatment of dental disease, studies in education, clinical and laboratory research and other detailed investigations pertinent to dentistry and related fields. The text should not exceed 3,000 to 4,000 words (approximately four Journal pages).

Clinical Reports:

are brief (up to 2,000 words) reports, case histories and clinical observations. References should be limited and minimum number of illustrations used.

Opinions:

fully documented (800 words or less) are welcome to be reviewed for publication at the discretion of the editor.

Manuscript Requirements:

Submit three (3) copies (original and 2 duplicates) to the Editor, Journal of the Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6. All graphs, photographs, charts and tables must also be submitted in triplicate. Authors are also requested to submit their article on computer disk if available. IBM compatible material is preferred. For more details, please contact the editorial staff.

A covering letter designating one author as correspondent with a full address and telephone number must accompany the article. All scientific articles are subject to review by selected consultant referees. Acceptance or rejection of an article for publication is based on the referees' reports plus editorial consideration.

The editor reserves the right to edit manuscripts for stylistic consistency, clarity and conciseness. The author named as correspondent will receive a copy of the edited manuscript for checking prior to publication. Authors will also be able to proofread their article at the galley stage; however, **no changes** other than typographical corrections may be made. If the author does not respond

within 48 hours of receipt, acceptance will be assumed. **No exceptions** will be made.

Manuscript Format:

All material (title, abstract, text, references, tables and legends) should be typed, double-spaced on one side of 8½ × 11 pages with margins of at least one inch on all four sides.

Article Titles:

should be descriptive but concise and suitable for indexing. Lengthy titles will be subject to editing.

Abstract:

stating the purpose, results and conclusion of the work must accompany all manuscripts. All abstracts will be translated into French (or English as the case may be). Abstracts should be approximately one typewritten page (250 words in length).

Authors Affiliations:

The authors' names, degrees, and university affiliations must be provided. Authors are responsible to disclose to the Editor any financial interests they may have in products mentioned in their article.

References:

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1. Hechter, F.J., Symmetry and dental arch form of orthodontically treated patients. *JCDA* 44:173-184, 1978.

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2. Kilpatrick, H.C. Work simplification in dentistry, ed. 2, Philadelphia, Saunders, 1964.

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Manuscripts that do not conform to the above requirements will be returned to the author! Please read all instructions thoroughly.

A professional partnership program

As President-Elect of the Canadian Academy of Periodontology, I feel that now is a crucial time for us to look at broadening the interactions of dentists. It is a time when we are dealing with new restorative materials, new prosthetic materials, new situations, as well as new patient responses to those situations. How can any practitioner familiarize him or herself with the vast amount of knowledge assembled in dentistry? I think we can help each other, and our patients, by developing symbiotic relationships for ourselves.

It is to everyone's benefit that we take the appropriate time and care to understand the oral health care needs of the population which may be different now than it was twenty years ago, and all the different options that we have regarding prosthetics, implants, etc. with which to treat these patients. We need to be able to call upon our colleagues who have special areas of expertise and learn together.

In guarding our areas of concern, we can lose sight of the larger view. In this case, I think the mutual dependence, the mutual confidence and trust amongst all the different groups will result in providing optimal patient care. This relationship, to my mind, is lacking in dentistry.

A Professional Partnership Program, whereby the patient's needs are best treated, monitored and controlled by a combination of general practitioner and specialist care, will succeed if we all understand that we are equally involved and important in the treatment, evaluation and results. As we learn to appreciate each other, I think our concepts of oral health will grow, and we will learn more about the people we treat and how best to treat them. Dentistry can then become more exciting and interesting.

The specialty groups in Canada are working hard to expand the boundaries of cooperation. We seek to treat all general dentists as equal colleagues and to move away from any self-indulgence that may have been evident in the past. We need to open up and share information. We really have no choice but to grow — as practitioners and associations.

Dentistry is becoming more complex as our choices of treatment modalities and options continue to increase. It is impossible for anyone to keep up fully in all areas. The best method open to us is to maintain close relationships among all therapists. We can learn a great deal from each other. And the closer we work together, the greater our successes and achievements will become.

*Dr. Malcolm Miller, Calgary, Alberta,
President-Elect
Canadian Academy of Periodontology*



Editor's Note: "It's My Opinion. . . ." is an opportunity for individuals to encourage open dialogue on important dental issues and concerns. If you have a strong opinion and wish to share it with the Journal readers, please write to the Editor.

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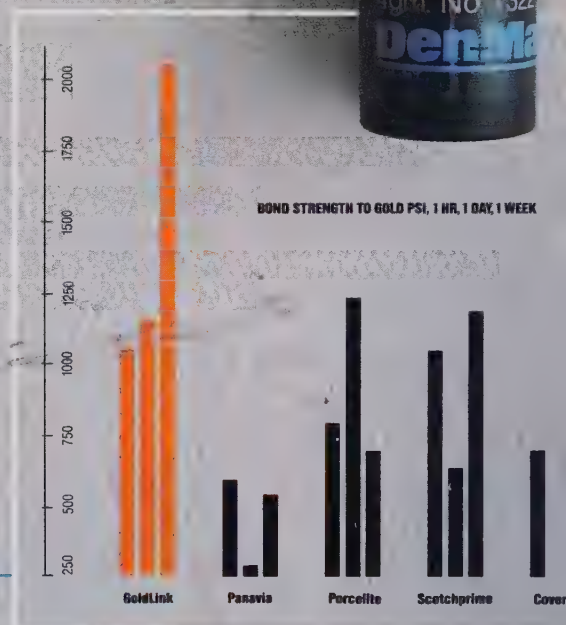
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ANNUAL INDEX
INDEX ANNUEL

▲ Periodontics
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▲ Parodontie
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In cooperation with the provincial dental associations and affiliated organizations, CDA offers services, in both official languages, intended to support and advise all areas of dentistry and to represent, protect, promote and develop the interests of the dentist as ethical practitioner, professional, educator, student, researcher, business person, citizen and individual.

CDA recognizes a particular responsibility to contribute to the development of national positions and standards related to dentistry, dental education, dental research, dental equipment, dental materials and dental personnel.

CDA is dedicated to the principle that all Canadians should have the best oral health care it is possible to provide; it actively seeks input from and dialogue with governments, consumers and all those interested in dentistry to enable it to serve more effectively both its members and the Canadian public.

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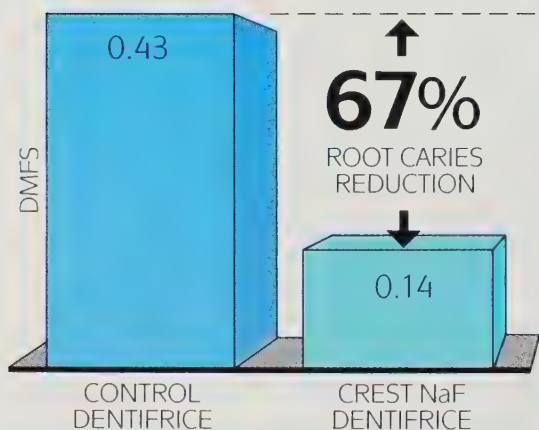
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JOURNAL

Canadian Dental Association
l'Association Dentaire Canadienne

December 1989

Vol. 55 No. 12

Specialty Features

Chemotherapeutic control of
plaque and gingivitis

965

Robert S. Turnbull, DDS, MScD

The role of systemic antibiotics
in periodontal therapy

967

Trevor Chin Quee, BDS, DDS, MS

Periodontal Surgery

975

What's new?
David L. Singer, DDS, PhD

Scientific

An allergic reaction following
injection of a local anaesthetic

981

Susan MacColl, BSc, DDS
Earle R. Young, BSc, DDS, BScD, MSc, FADSA

Some clinical properties of
Octocaine 200 (2% Lidocaine with
Epinephrine 1:200,000)

987

Earle R. Young, BSc, DDS, BScD, MSc, FADSA

The role of chlorhexidine
in clinical dentistry

995

Vijay K. Pruthi, DDS, Diplomate, ABP
William F. Trolenberg, DDS



This seasonal cover design is the result of winning concepts contributed by CDA Headquarters staff members.

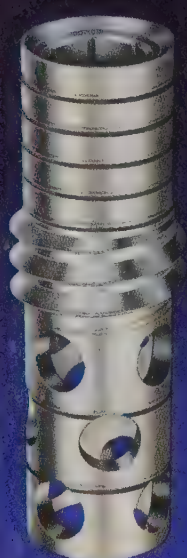
Director of Administration Joel Neal, Librarian Martha Vaughan and Information Officer Kimberley Allen-McGill all tied for the top honors.

Departments

- 935 Editorial
"Now that's a real grudge"
- 936 President's Column
- 937 News Update
- 949 Brieflies
- 953 CONTINUING EDUCATION
- 958 Dental Students' Forum
- 960 Letters to the Editor
- 961 Obituaries
- 962 Library/Resource Centre
- 963 Book Reviews
- 999 ANNUAL INDEX
- 1007 Announcements
- 1009 Marketplace
- 1011 Advertisers' Index
- 1014 It's My Opinion!

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Now that's a real grudge!

Atending the CDA Convention in Vancouver last August an Ontario dentist stopped the Editor in the busy reception area and paid the Journal a compliment. There was immediate interest. Compliments, particularly unsolicited and generous, are not that frequent.

There was immediate interest for another reason. The dentist quickly followed this compliment with, "although I enjoy reading the Journal, especially over the last year or two, I haven't been a member of CDA for years."

(readers from provinces other than Ontario and Quebec should note that provincial (not dental) statute prohibits mandatory membership in associations other than licensing bodies. Therefore, dentists in Canada's two largest provinces make a personal choice to join CDA. The CDA Journal is delivered to all dentists in Canada.)

Noting the incongruity of the situation; enjoying the Journal on one hand and refusing CDA membership on the other, the dentist was asked his reason. The answer certainly depicted candor but not much logic.

"Thirty years ago when our Insurance plans were taken over by CDSPI I didn't think Ontario dentists at the time got such a good deal and I vowed never to join CDA". He continued on with a fair element of enthusiasm (if not rational), "Mind you, I think things are great now and I really encourage my younger associates to get involved, but not me, I will never join CDA."

Reminding Dr. Dentist from Ontario that much has changed over 30 years didn't seem to have much impact. "I know", he said, "CDA and CDSPI have both done a lot for dentists but I guess I'm just plain stubborn — I will never join".

Another tact was tried. "If you come to the Convention, if you like the Journal, if you approve of many of the actions of CDA and CDSPI, don't you feel they deserve your support by joining? After all, your membership and your dollars added to thousands of other dentists depicts personal commitment and solidarity."

"I suppose", he replied. "But like I said, I'm stubborn. I just can't forget what happened 30 years ago". When asked if he didn't think that kind of rigid thinking has spawned ill-feeling, rancor, wars and hatred for thousands of years, Dr. Dentist from Ontario got a bit on the defensive. "Oh, I wouldn't say I was that bad. I think CDA is a good organization that does a lot for the profession. Like I said, I encourage the younger dentists to be members, but not me". He repeated (for the third time), "I'll never join, I'm just stubborn!"

Acceding full marks to the dentist for consistency and honesty but failing him on rationality, the conversation concluded on friendly terms. One man thinking, "You know, CDA really is a good organization but I'll never join," and the other muttering, "Dr. Dentist from Ontario seems like a really nice person and I bet he's a fine dentist but that's a real grudge if I ever saw one!"

*P. Ralph Crawford, BA, DMD
Editor, Journal of the Canadian Dental Association*

All statements of opinion and supposed fact are published on the authority of the author who submits them and do not necessarily express the views of the Canadian Dental Association, unless such statements or opinions have been adopted by the Association. The editor reserves the right to edit all copy submitted.

President's Column



‘The Real Thing’

As I write this final column of 1989, I look back with pleasure at some of the year's highlights. The first item that comes to mind is CDA's successful transfer of CDSPI plans from Imperial Life to Metropolitan Life. The Canadian Dental Association can be justifiably proud that Metropolitan Life decided to divest itself of any interest in capitation (i.e. Future Focus), and to concentrate on serving the dental profession through the prepaid indemnity plans route.

The 1989 CDA Convention in Vancouver was outstanding. It drew almost 6,000 registrants and well over 2,000 of these were dentists. It was a tremendous financial success and it makes me optimistic with respect to the 1990 Convention to be held next August in Ottawa.

Also in 1989 I had the opportunity and the very distinct pleasure to present to Dr. Thomas Ginley the first ever CDA ‘Friend of Canadian Dentistry’ Award. Dr. Ginley is currently Executive Director of the American Dental Association. The presentation was made during the November ADA annual meeting in Honolulu.

1990 is almost upon us and in January dentists across the country (except in the province of Quebec) will be introduced to a new improved CDA Uniform System of Codes and List of Services. I understand they will be implemented in British Columbia as of February 1st.

1990 will see renovations at CDA's Ottawa headquarters moving to the construction phase. Completion date is scheduled for late spring of 1990.

1990 is also the year dentists in Quebec will find themselves (as of January 1st) with malpractice insurance coverage administered by the Order of Dentists of Quebec. (Quebec is following the lead of Ontario where the Royal College of Dental Surgeons has managed plans in that province since 1973). I am concerned about the long-term effect of this move from CDSPI and worry about the stability of coverage in the remaining eight provinces.

The end of the year is an appropriate time to salute CDA headquarters' staff for providing yeoman service to the dental profession under somewhat trying circumstances often in a cramped working environment. We at CDA pride ourselves on the minimal staff turnover, particularly at the senior level. I can assure you we have loyal dedicated staff – all the way from the downstairs mailroom to the ‘upstairs’ Executive Offices.

A few years ago a well-known soft drink described itself as the ‘real thing’. In the words of my daughter Rebecca, ‘Love is the real thing at Christmas, daddy.’ Irrespective of what you call your celebration, or what the religious occasion in your cultural heritage may be, please make it a family event and keep love in your heart.

Finally, this my opportunity on behalf of our Management team, Gilles Dubé, Les Allen and Jack Niedermayer, to wish everyone a happy, safe Christmas season and a prosperous, healthy New Year.

*Kevin L. Roach, BSc, DDS
President of the Canadian Dental Association*

Teaching Conference

Ethics in Canadian Dentistry and Dental Education

by Rebecca Dufton

Organizers of the 1989 Teaching Conference on Ethics warned that there was some hard work ahead. For two full days, a group of 59 educators, dental association executives, and ethics experts gathered in Toronto to suggest revisions to the CDA Code of Ethics, and improvements to the ethical content of the dental education system. From there, an action plan for organized dentistry and dental educators would be circulated, and recommendations for the content and format of a new CDA Code of Ethics would be considered by the CDA Ethics Committee.

"The conference arose out of concern from provincial dental associations and registrars about a weakening of Canadian dentistry's ethics. But, unlike many other conferences that feature debate and well-intentioned recommendations that soon disappear, this one would have a direct, immediate impact on both Canadian dental ethics and curricula," said conference chairman Dr. Bruce Graham, Associate Dean of Dalhousie University's Dental Faculty.

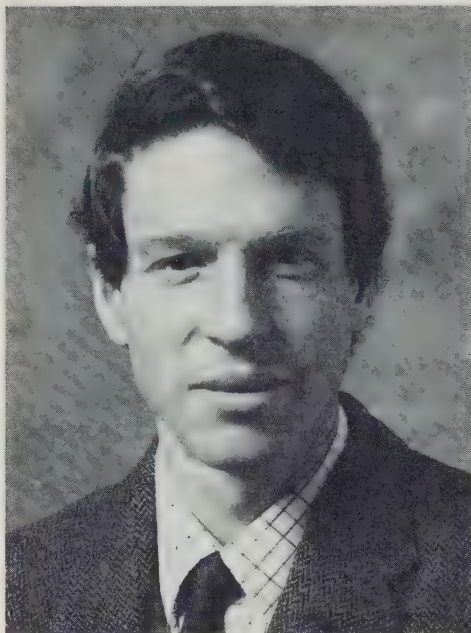
Two experts

Two recognized experts in the field of dental ethics, Dr. David Ozar and Professor Arthur Schafer, served dual roles as keynote speakers and conference facilitators. The program alternated lectures, workshops and plenary sessions.

Dr. Ozar is from Loyola University's Department of Philosophy and School of Dentistry. He is chairman of PEDNET, a network of dental ethics educators, practising dentists, ethicists, social scientists, and dental organization officers in North America.

Professor Schafer is Director of the Center for Professional and Applied Ethics and Head of the Biomedical Ethics Section, Faculty of Medicine at the University of Manitoba. He interrupted his year-long sabbatical at Oxford University to speak at the conference.

Dr. Ozar and Professor Schafer were among the first in their countries to develop ethics curricula for dental programs. Until about ten years ago, no one with ethics training was working in the field. There were no case studies, no texts, and almost no articles on dental



Professor Arthur Schafer

ethics on which to base a dental ethics educational program.

An Overview of Professional Ethics: some tough words

The public has always associated professionalism with ethical conduct. Patients are not in a position to decide who practises or to judge the quality of a professional's work. In exchange for power and autonomy, society expects professionals to police themselves.

"Something has gone terribly wrong in dentistry," says Professor Schafer, "because when dentistry and ethics are mentioned together, people laugh."

"Many people see dentistry as a business, and this erodes the moral base of dentistry. For dentists, this is damaging to self-respect, although perhaps not to their financial status," says Professor Schafer.

"The increasing trend towards marketing and the highly competitive marketplace is threatening to dentists as health care professionals," he says.

According to Professor Schafer, the problem is rooted in the dental education system. Professor Schafer cited a study indicating that the longer people stay in school, the more cynical they become. This is deeply worrying, he says, because

something educators are doing is having a demoralizing effect. If students begin practice with this attitude, where will they be later?

A case study presented to his third-year dental students described a patient who has a problem that is beyond the new practitioner's level of experience: treat or refer? Professor Schafer found the prevailing attitude of the students (before ethical instruction) to be "caveat emptor" — if the patient doesn't ask, don't offer the information, because you can't afford to turn any patients away.

Dr. Ozar agrees the dental education system needs to be changed. "In the clinical setting, students are viewed by the professors as stupid and potentially dangerous," he says. They are not treated as peers or colleagues. The students rarely see the faculty — their role models — interacting with patients. The first improvement Dr. Ozar would like to see is to drop the expression, "in the real world" — schools should reflect reality in the perception of dental students.

Three models of Professionalism

Dr. Ozar discussed three models he developed to describe the relationships between the professional, the patient and the community. Although no one model describes dentistry as it is, was, or will be, each model illuminates different features of the profession.

The Commercial Model: Dental Care as a Commodity

From this perspective, the interaction between dentist and patient consists of communication about the commodity, its price, and the actual exchange of that commodity for the price that is agreed upon. In this situation, dentist and patient are competitors. There are no obligations or commitments between dentists and patients beyond what has been originally agreed to.

Guild Model: Dental Care as a Privilege

In this model, the professional is dominant; he/she is the guardian of dental

knowledge, wisdom and skills. The dentist accepts the obligation to guard and use the knowledge and skills and uphold the profession. The patient is passive, receptive, and uninformed.

The Interactive Model: Dental Care as a Partnership

The dentist's professional obligations — to deal properly with each patient and to actively support the profession — derive from more fundamental obligations to the community, which has the moral authority to distribute power.

These models are presented by Dr. Ozar as tools for reflection, to gain understanding of the processes affecting dentistry at present, and to shape their outcome. (This theory is described in the JADA Vol. 110, Feb. 1985, pp. 173-177.)

Some Basic Principles

"Ethics is the formation of habits and living by them," says Dr. Ozar. The key is to habituate the process. Dr. Ozar cited a study which estimated that 98 per cent of our actions are not based on thoughtful, careful examination, but on habit and previous experience. Often, it is difficult to think of all the possible choices in decision-making; the range of viable alternatives is determined by habit. "We must train ourselves to constantly test our habits," he said.

Value Categories

There are, however, principles within the profession that give guidance in ethical dilemmas. Dr. Ozar has compiled a value hierarchy for decision-making. At the top: commitment to life and general health; patient autonomy; practice preferences; esthetics; and cost of treatment.

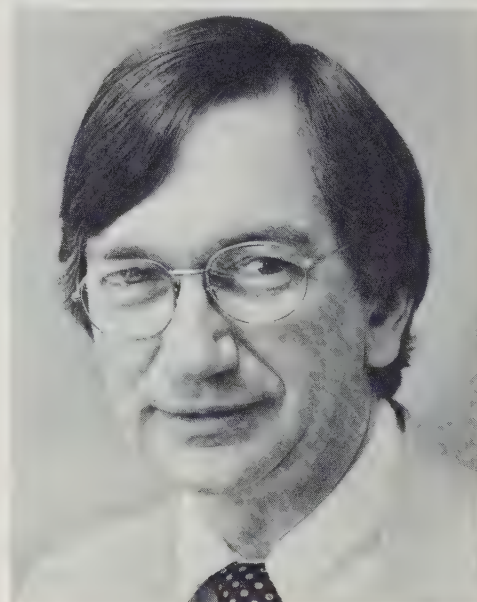
The order of the hierarchy is affected by the patient's values: for some, cost is the over-riding factor; others want the dentist to decide what is best for them. The most basic principle is that when the patient is in pain, he/she is not able to choose freely. The dentist's first obligation is to restore the patient from pain so that patient autonomy is possible.

Survey on Dental Ethics

Dr. Bruce Graham, conference chairman, revealed preliminary results of a survey on dental ethics which was sent to 10 provincial dental associations and dental board registrars. Respondents were asked to rate the top five ethical issues in the province, based on the number of complaints cases.

There is a recurring theme across the country, according to Dr. Graham. All respondents perceive a deterioration of ethics. Possible causes include: increasing competition; decreasing treatment needs and escalating cost of practice. Everyone agreed that the CDA Code of Ethics needs some revision.

Some of the ethical problems cited were: fraudulent billing; criticism of other dentists; illegal employment duties of dental auxiliaries; failure to maintain professional competence; marketing and advertising, and over-treatment.



Dr. David Ozar

Respondents also felt the current education environment places more emphasis on treatment procedures than on patients, and does not provide students with good ethical experience. On average, 12 hours are devoted to ethics over the typical four year dental program.

The CDA Code of Ethics

"A code of ethics serves as a guide to behaviour, an aspirational document — an ideal picture of the profession for potential members and the public. Discipline is not its primary function; it does not and cannot work as a disciplinary document," says Professor Schafer.

Does the CDA Code bear the "test of publicity" — is it a document that dentists would be proud to show the community? Not according to Professor Schafer. He feels that the code promotes public cynicism; it looks like a cover-up for the profession. The current code reinforces the public perception that dentistry is a business.

The code (Principle One, article 1: Service) states that dentists have "a duty

of service to the public." To Professor Schafer, it is not clear whether this duty is first and foremost, or whether service can be overridden by other duties and concerns.

Furthermore, Professor Schafer cites the explanation and estimate clause which urges dentists to "advise the patient of the treatment he/she recommends" — not of the choices available, so that the patient can consider the options.

He also bases this opinion on the "criticism clause" (Principle Two, article 2) which urges dentists to refrain from criticizing the work of colleagues. If dentists' highest obligation is to the public, then they have an obligation to inform patients of inadequate dental work.

In the group sessions that followed, participants were invited to make recommendations for a revised Code of Ethics, which would be considered by the CDA Ethics Committee. Groups addressed the following issues: advertising and marketing; creative billing; treating beyond competency; criticism of colleagues; duties of dental auxiliaries and informed consent/dental fee information.

Teaching Ethics in Dental Schools

Both Professor Schafer and Dr. Ozar called for interactive teaching models. Students should be encouraged to reflect more about ethical considerations in their dealings with patients. They should also be aware of possible conflicts between ethics and the law — and sometimes, even be prepared for civil disobedience.

Dental students are like adolescents: eager to mold themselves to emulate their role models, says Dr. Ozar. The schools are missing an opportunity to take advantage of this impressionable period by not interacting more with the students. The second change Dr. Ozar suggests is for teachers to make the educational process more reflective; to talk about ethics and clinical diagnosis simultaneously, not separately.

Conclusions

Following the two-day session, recommendations for changes to the CDA Code and the dental education system were compiled. The CDA Ethics Committee is currently examining proposed code items from the conference and the Association of Canadian Faculties of Dentistry (ACFD) will soon receive suggestions for a revised curricula in dental and dental hygiene education. Δ

Further explanations about potential of EDI system

Possibly one of the most significant changes facing the dental profession in the very near future is the impact of electronic communication — EDI — electronic data interchange.

In the September issue of the Journal Dr. Bernie Dolansky, the CDA Executive Council Liaison to the Third Party Dental Plans Committee, outlined the basics of how EDI would operate. Following that publication numerous inquiries were received. The Journal felt further information should be forthcoming on such an important aspect of day-to-day dental office activities. The best way to be informed is to go "right to the top".

The Journal:

Dr. Dolansky, are dentists being rushed into something they don't really need? Where is all the impetus for EDI coming from? Is it from dentists; from CDA; the ODA or the insurance industry?

Dr. Dolansky:

The impetus is from the marketplace. The technology now exists. There are at least three companies out there willing and anxious to involve dentistry. The technology can be helpful or dangerous depending upon when and how we become involved. Instead of waiting "to see what happens" the Third Party Dental Plans Committee has advised, and now has received full permission from our Board of Governors, to proceed "post-haste".

Our good friends in pharmacy have been leaders in this field and have been submitting claims electronically for a few years. The big difference is, and I can't stress this too emphatically, the pharmacists have gone *individually* and *province by province*.

In most instances the Insurance Companies are running the pharmacists' operation — CDA wants to avoid this. We feel it serves dentistry best if dentistry is in control.

The Journal:

OK, we can accept that, but again, are we being rushed?



Dr. Bernard Dolansky is interviewed by JCDA Editor Dr. Ralph Crawford.

Dr. Dolansky:

Rushed? I wouldn't think so. The real world of technology is pushing us. We have just got to sit up and take notice. It's there. EDI will become part of the Health Care delivery system whether we like it or not. We are either in, out, or playing catch-up. The smart move is to go now.

The Journal:

Why is CDA getting so involved with its own resources and money? It must be costing thousands of membership dollars. Why doesn't the insurance industry itself create an EDI system? They must have plenty of resources to do so — at least more than CDA.

Dr. Dolansky:

When you talk about thousands of dollars you're right. The cost to CDA is into six figures! But it is an excellent investment. The profession will have control of the inevitable, will have its investment returned many times and ultimately be able to provide a better claims delivery system for our patients.

Our intent is for CDA to pay for all the planning and organization. Industry will pay for all the development to operate a global system; the consultants, the hardware and software. BUT, and it's a big BUT, the data base will be owned and operated by dentistry.

Let's talk history for a moment. You will remember the plight of claim forms back in the 1960s and 70s. There was a plethora of them — all different. It was only solved when organized dentistry said, "Enough! We will use only *our* Standardized Claim Form and data requirement." It took two or three years for dentistry to win out but it worked. Exactly the same thing is happening with EDI. Either we organize it well at this stage or we end up with two or three more years of clashes and confusion. CDA feels the only way to go is to encourage our members to have EDI performed under our rules. There are a few small groups of companies who still think they can go without dentistry but we hope to convince them our members will not lend support unless it is done by rules provided by National and Provincial Dental Associations.

The Journal:

Dr. Dolansky, let's be candid about the whole thing. It's about the money! What is the bottom line? Surely everyone is getting excited because they see the potential for thousands and thousands of dollars.

Dr. Dolansky:

Like any new technology it will only work if there are advantages to everyone involved. So let's talk about those important dollars. Depending upon whom you talk to it costs the insurance industry today about \$1.50 to \$3 to process and adjudicate a claim form. If this process can be accomplished electronically, and if the insurance company has an efficient computerized adjudication system, then that claim form process will cost less than \$1. Conservatively, the savings is 65 cents for each and every claim form in the country.

Now here is where it gets "heady". Canada has about a four to five billion dollar dental industry and we know the average insurance claim is about \$100 and we also know about 50 per cent of Canadians have some type of third party coverage. Multiply that out and the bottom line you asked about is \$25 to \$30 million dollars a year saved to the system if we are on EDI!

But don't look so shocked. The technology to do this is here now. Just think of the last time you filled up your gas tank at Petro-Can. You just gave the clerk your card and the operation took only seconds; the card was validated, the complete transaction recorded, and you weren't even asked to sign the slip.

Now here is where it is really important. Our patients ultimately win with EDI. Savings should be passed on to them for either lower premiums or better benefits. Let's spend a minute on this aspect.

CHLIA, the Canadian Health Life and Insurance Association, lists over 40 insurance companies that deal in dental benefits and we know there are countless third party administrators all trying for a bigger slice of the dental insurance business. Couple that with the fact over half of all dental benefits are done on ASO (administrative services only), or experience rated basis. This means the *administrative costs* are the biggest area of price competition. This is where EDI will fit in. It will reduce the administrative costs. Plan purchasers can ultimately pass the benefits on to the plan recipient — the patient. Does this not fulfil CDA's mandate to provide optimal dental care to

the public at fees they can afford?

Let me impress you further about the importance of EDI. It costs about \$1 to \$1.50 to issue a cheque for each claim submitted. When EFT, electronic funds transfer, becomes another part of the system it will mean a further savings of 50 to 60 cents per claim! There is no doubt. We have significant economic forces at play here.

The Journal:

We've heard a lot about "big business" but what about the "little guy" — the solo practitioner living in Kapuskasing, Ontario, to Kamsack, Saskatchewan. Will they be disadvantaged if they *don't* want EDI?

Dr. Dolansky:

Let me emphasize. No dentist need ever feel EDI is compulsory. The choice will be an individual decision. We know the paper claim will always be with us. But CDA estimates about 50 per cent of all claim forms will be electronic in three years. Dentists not interested in EDI need never fear the Association will abandon them. We are here to look after everyone's interest.

The revenues will be split between the CDA and the provincial associations using a negotiated formula. The effect can easily be seen in the reduction of the dependency on fees as the only income to support member services.

If the dentist's practice is already computerized — and it is estimated about 25 per cent to 30 per cent are in some areas, there will be no further cost to a practice. There will be an immediate decrease in the paper flow; postage will be saved and turn around will be much, much faster. There is also an important "bonus". The speed of transactions will increase cash flow for both dentist and patient.

If a practice is *not* already computerized there is no large outlay of capital to get started. The only expense will be a PC system, the EDI software and a second telephone line. The insurance company will pay for all transmission costs, line costs and the cost for the "switch" of the EDI system. There will be plenty of help

for the dentist to become familiarized with a system. Each EDI vendor has been told up-front one of the requirements is the provision of free instruction modules for every dentist-purchaser. A "help-desk" phone will provide immediate response to inquiries.

The Journal:

Well, that looks after the dentist. What's in it for the dental associations? Surely they too sense an opportunity to make money.

Dr. Dolansky:

First let me inform every member that one of an association's primary obligations is the interests of its members. In this case we are being proactive. We have a golden opportunity to not only decrease the cost of administering claim forms but also to save enough dollars in the process to decrease the burden of membership dependent solely upon the generation of dues income.

The Journal:

All right. But how does the association make this money?

Dr. Dolansky:

The Association will be looking at a 15 cent charge per claim. If you can imagine 15 claims per day per dentist this adds up to about 300 claims per month for an average total of \$45. Stretch that out to 10,000 dentists over a year and you can see that a lot of dollars are involved!

The revenues will be split between the CDA and the provincial associations using a negotiated formula. The effect can easily be seen in the reduction of the dependency on fees as the only income to support member services.

The Journal:

Is it true the ODA originally developed the EDI system and now that "big bucks" are involved CDA wants a "piece of the action" (or all of it)? Is everyone just getting greedy?

Dr. Dolansky:

Both CDA and ODA became aware and interested in EDI about the same time. Both looked at several systems and spoke to the same people to determine the benefits. After several meetings and discussions, as well as input from other dental associations and from the industry, it became very evident dentistry's greatest strength has always been in a united approach.

The Ontario Dental Association has stipulated its requirements rest with a national system. Both Dr. Bill Glave, ODA's immediate past-president and Dr. Mac Balfour, the current ODA president, have categorically expressed their belief that a national system is the best answer for all concerned.

The Journal:

What if a particular province wants to "go it alone"?

Dr. Dolansky:

Oh sure, it's possible. The vendors of EDI would like a "divide and conquer" situation. Unless we want to go back to the claim form battle of years ago, or get ourselves into the difficulties the United States is having right now, my advice would be to stand firm in a united national policy on this issue. The Canadian past and the USA present is pretty obvious to me.

The Journal:

Why isn't Quebec participating? Do they know something we don't?

Dr. Dolansky:

Quebec is a unique situation. They already have a system called Blue Cross DentaId which was set up in 1987 to compete directly with the insurance companies and third party administrators in that province. They have accomplished a great deal within their system and now have to be convinced EDI is "in no way, shape or form", meant to be an adjudication system. I believe we now have that understanding and in fact, further negotiations are presently under way with the Quebec association.

The Journal:

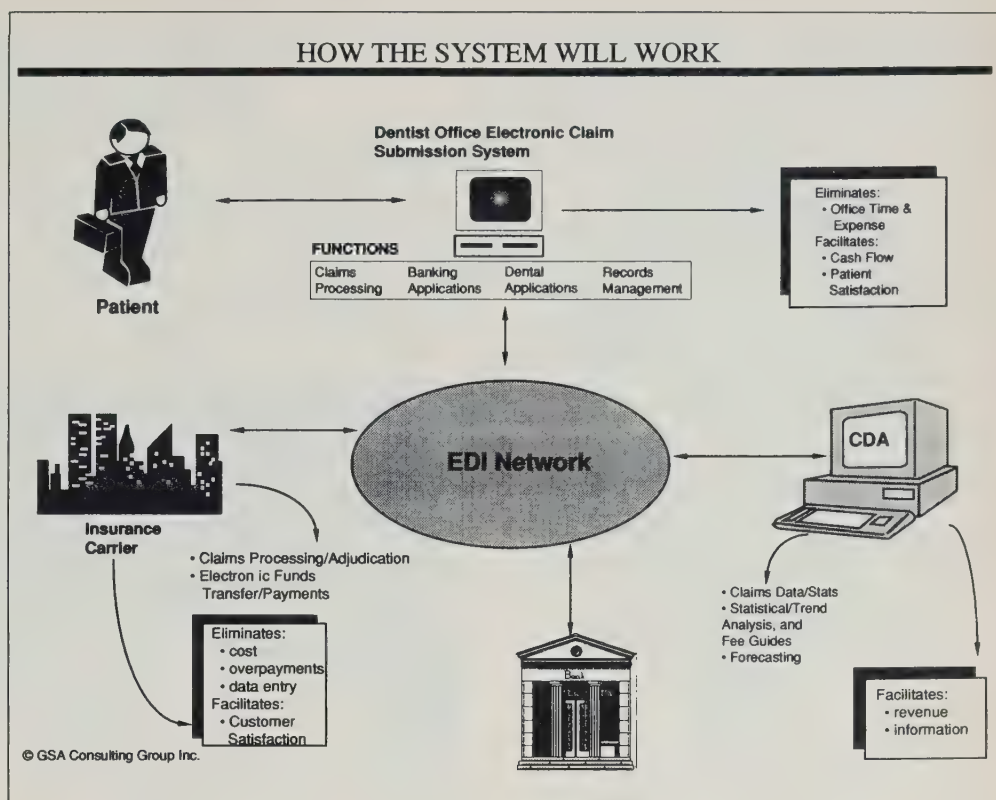
Is EDI for insurance claims just the tip of the iceberg of things to come? Can the system be used for other functions such as total office record keeping, banking and inventory control?

Dr. Dolansky:

I hope it is the tip of the iceberg. EDI can do those things you indicated and **more**. It can be electronic mail; it can do banking from the front desk and it will eventually allow dentists to shop by mail for supplies.

The Journal:

Dr. Dolansky, this is perhaps a question related to the biggest concern expressed



by dentists. Your September article in The Journal stated that one of the main advantages of EDI is the collection of data by dental associations.

Is this "data collection" just another name for profiling? Is Big Brother going to be spying on dentists' practices?

Dr. Dolansky:

I don't want to alarm the dentists in Canada, but profiling is already, to some degree, here now. It is working quite successfully in British Columbia under the auspices of the College of Dental Surgeons of British Columbia. In fact, The Journal last November featured an article by Dr. Brian Rocky, the Registrar in British Columbia, explaining exactly how profiling is working for the benefit of the profession.

In Ontario the government has made it clear to all professions, in no uncertain terms, quality control must be a part of any licensing body mandate. Data Collection will be an important aspect of any quality control system.

If quality control is a must, and I believe it is, then should it not be done properly by our peers in the licensing bodies? Data Collection is certainly one of the most important features of any quality control program. The dentists should be asking themselves the questions, "Do I want a quality control system operated by my peers whom I elect and trust? Do I want

the system to function with the best possible method of data collection?

All EDI is going to do is make the data base available. The dental associations and licensing bodies must request it. Of course, the dental organizations can always get certain data from the insurance companies but somehow my comfort zone is higher when that data comes from my own peers. I really don't think dentists, particularly those dentists with "quality" practices, have anything to fear from data collection and profiling. I know I haven't.

The Journal:

We hear the term "Network Providers". Who are these people? Why do we need them? Why doesn't CDA just do it without a middle-man taking his cut?

Dr. Dolansky:

The Network Providers are the same people who get your VISA or MasterCard "swipe" from the hardware store, gas station etc., back to the provider. We believe they are necessary because we need a *neutral* third party buffer between the dentist and the insurance company. It keeps it all very efficient and keeps everyone in the system honest.

We have to be realistic. Added to the equation is the fact that although only a very few insurance companies at present

can do effective profiling, every insurance company of any size is developing some type of a profiling system. Unless we control it, dentistry could be faced with a situation of a profiling system we don't like and one which we couldn't change.

The Journal:

Can you, briefly, in *real* simple terms (for someone who knows nothing about computers) explain the THREE types of systems you talked about in your September Journal article?

Dr. Dolansky:

I hate to say this but some of the material in that article, just four months ago, is already outdated. We have now decided to go to a system capable of real time on line, reaction. It will be jointly owned by CDA and the Provincial Associations and the Insurance Companies will be participants.

The Journal:

Dr. Dolansky, again referring to your September Journal article, your concluding paragraph certainly made sense. You emphasized the necessity of only **one** system **controlled** by dentists, in this case CDA. Realistically now, is this going to happen?

Dr. Dolansky:

It is entirely up to CDA members. If they support us and take our advice that EDI will only be a positive development, IF it is developed by dentists and controlled by dentists, and IF they don't allow any other system into their office, then YES, that's exactly what will happen.

The great majority of Canadian dentists have taken our advice on Third Party matters for more than 15 years and it is one of the important reasons we enjoy our practices the way we do and why our patients enjoy excellent oral health care. I know EDI is going to be just a continuation of the same process. Δ

Did you know?

IT'S ALL RELEVANT.

The cost of a full page color advertisement in the National Enquirer is \$46,000. Comparable cost of a full color page advertisement in the CDA Journal is *only* \$2,400 — almost 20x cheaper.

But really, consider *our* quality and *our* audience!!

CDA Third Party Dental Plans Committee Sponsors Conference

On September 21 and 22 the CDA Third Party Dental Plans Committee sponsored an Insurance Conference in Toronto. Titled, "Dental Plans: Our Shared Concerns". It was the second annual meeting to deal with the varied and intricate aspects of third party dental coverage. Among the numerous topics discussed were Plan Designs, Proof of Loss, DID Update, Uniform System of Codes, Consumers' Guide, and EDI (electronic data interchange).

The 120 delegates from across Canada represented the Insurance Industry, Benefit Consultants, Dental Licensing Bodies and Provincial Associations. Δ



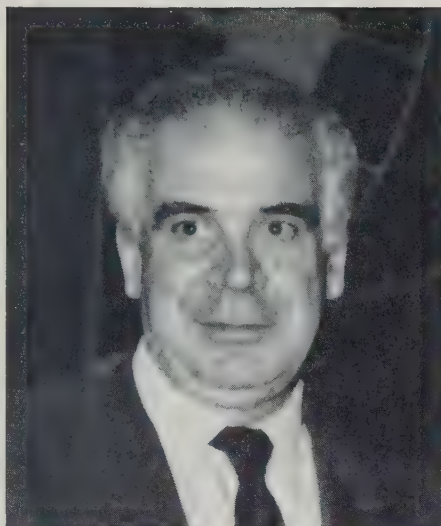
Following "Dental Plans: Our Shared Concerns" the Third Party Dental Plans Committee held its regular scheduled meeting on September 23rd.

Seated left to right: Ms. Pat Duminy, Ottawa, DID Co-ordinator; Dr. Peter Edmison, Ottawa, National Contact Dentist for DID; Dr. Donald Gutkin, Winnipeg, Committee member; Dr. Toby Gushue, St. Johns, Chairman; Ms. Susan Matheson, Ottawa, Committee Co-ordinator; Dr. Larry Rossoff, Richmond, B.C., Committee member; Dr. Donald Tustian and Dr. Ronald Golden, both Toronto periodontists and guests at the meeting. (Missing — Dr. Bernie Dolansky, Ottawa, Executive Liaison to the Committee)



Ms. Pat Duminy, DID Co-ordinator and Dr. Peter Edmison, National Contact Dentist for DID, discuss future plans for Dialogue In Dentistry. Working with Provincial Associations from across Canada they intend to launch a "DID Road Show" in the near future to keep all Third Party Dental Plan Participants aware of all aspects of dental pre-paid insurance.

Dr. Ruperto Gonzalez-Giralda installed as FDI President



Dr. Ruperto Gonzalez-Giralda

Dr. Ruperto Gonzalez-Giralda was inaugurated as President of the Fédération Dentaire Internationale (FDI), the world organization for dentistry, on 8th September 1989, during the 77th FDI Annual World Dental Congress in Amsterdam.

With doctorates in both Medicine and Dentistry from the University of Madrid, Dr. Gonzalez-Giralda was trained in orthodontics and oral surgery in the United Kingdom.

His longstanding association with the FDI began in 1969, when he was appointed FDI National Treasurer for Spain, a position he held until he was elected to the Council of the FDI in 1978. He served as a Consultant to the Scientific Programme Committee of

which he later became a member. In 1983 Dr. Gonzalez-Giralda was elected to the Executive of the Federation as Treasurer and four years later, during the 75th FDI Annual World Dental Congress in Buenos Aires, Argentina, he was unanimously elected FDI President-Elect.

A founding member of several national and international dental societies and active member of many others, Dr. Gonzalez-Giralda is a past-president of the European Orthodontic Society and current president of the Spanish Orthodontic Society. Moreover, he is an honorary member of the American Dental Association, the Bundesverband der Deutschen Zahnärzte (German Dental Association) and the Academy of International Dentistry among others. He is also the recipient of the 1989 Elmer S Best Memorial Award of the Pierre Fauchard Academy.

In the past Dr. Gonzalez-Giralda has acted as Consultant in Orthodontics and Oral Surgery to the regional hospital network in the Canary Islands and as an Advisor on public dental health to the regional government. He also returned to the University of Madrid as Visiting Professor of Orthodontics at the Faculty of Dentistry.

Dr. Gonzalez-Giralda is married with one daughter and currently lives in Tenerife where he runs his own orthodontic clinic. Δ

Dr. David Singer is new CFDE trustee



Dr. David L. Singer

Dr. Ted Ramage, CFDE Chairman, is pleased to announce the appointment of Dr. David L. Singer as a Trustee of the Canadian Fund for Dental Education. Dr. Singer's appointment was approved at the recent CDA Board of Governors meeting.

Dr. Singer is currently Associate Dean, College of Dentistry, University of Saskatchewan. On CFDE's Board of Trustees he will represent the Provinces of Manitoba and Saskatchewan.

Dr. Singer received his dental degree from the University of Alberta in 1964. Following his graduation he practiced in Saskatoon prior to entering post graduate studies in Periodontics at the University of Manitoba and receiving his Ph.D. (Oral Biology).

A Past Chairman of the Basic Sciences Committee of the Canadian Academy of Periodontics, he has served on several accreditation teams of the Canadian Dental Association surveying both post graduate programs in periodontics and dental hygiene. Dr. Singer was a councillor of the Canadian Association of Dental Research, a Secretary-Treasurer of the Saskatchewan Society of Dentistry for Children and a former Chairman of the University Hospital Dental Staff. He is a member of the B'nai B'rith.

Dr. Singer replaces Dr. William F. Campbell, of Winnipeg, who served with distinction on CFDE's Board of Trustees for the past six years. Δ

Did you know?

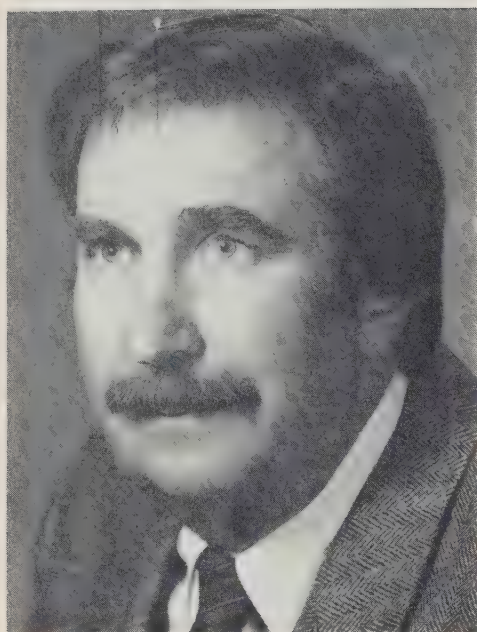
That CDA had a NO SMOKING policy almost 25 years ago? At the Annual Meeting of the Board of Governors in June 1964, the following special resolution was adopted unanimously. . .

"Whereas the Canadian Dental Association is dedicated to the improvement of the health of the people of Canada, and Whereas there is a considerable mass of scientific evidence that smoking is detrimental to health, therefore be it, Resolved that the Canadian Dental Association go on record as actively supporting the objective of the Canadian Smoking and Health Program of the Department of National Health and Welfare.

It is directed that a letter be sent to the Minister of the Department of National Health and Welfare advising her of this resolution."

Victim of stroke

Dr. Clement LeBlanc, CDA Governor, dies at 54



Dr. Clement LeBlanc

Dr. Clement LeBlanc, a popular member of the Board of Governors of the Canadian Dental Association died recently in Moncton, New Brunswick. He was 54.

He was educated at the University of St. Joseph, Moncton, N.B. and received his dental degree at the University of Montreal.

Dr. LeBlanc was a director and past president of the New Brunswick Dental Society, past president of the Atlantic Chapter of the Academy of General Dentistry and past Canadian Chairman of the Academy of Dentistry International.

He had served for some time as a clinical examiner for the National Dental Examining Board and as a member of CDA's Council on Information Services. He was also chairman of the selection committee of Atlantic Dental Students for the University of Montreal.

Dr. LeBlanc had rendered exceptional service to his New Brunswick Dental Society as past chairman of that body's negotiating committee and the provincial advisory committee.

Active in community life

He offered the benefits of his leadership talents to many Moncton endeavors.

Gearing-Up: 1990 CDA Convention



Dr. Michel Jahjah

The 1990 CDA Convention, August 25-29, 1990 promises to be a capital event. All the action will be taking place in the heart of the nation — Ottawa —

a vibrant city with a multitude of cultural activities at its fingertips.

The face of Canada's capital has undergone numerous changes since we last convened there. Its neighboring city, Hull, is home to the nation's new Museum of Civilization — an architectural extravaganza which houses numerous attractions. Ottawa herself has also acquired more flavour in the past three years. The new National Art Gallery located on Sussex Drive is a definite "must see" for visitors.

The 1990 CDA Convention will bring you within close proximity of all this and more. With Convention Headquarters located in the heart of the central business district, delegates will find themselves a walk away from a wide range of capital attractions, including the Rideau Centre, the Byward Market, the Rideau Canal, Parliament Hill, the new National Art Gallery and numerous museums. You'll also be a short hop away from the picturesque Gatineau Hills and the many francophone cultural attractions Ottawa's neighboring city, Hull, has to offer.

Over the next few months we will be introducing you to many of the numerous attractions to be found in the

Nation's Capital in more detail because we know the 1990 CDA Convention will offer you more than your average convention. It will give you a prime opportunity to acquire new knowledge about the dental profession AND an opportunity to discover the heritage of Canada through a profound selection of national treasures.

As you read this article, the 1990 Convention Committee will be striving to develop a Scientific Program to outdo all others. Topics to be addressed during the 1990 convention include, Crown and Bridge and Restorative Dentistry; everyday oral surgery; diagnosis and pathology; implants; dental office emergencies; orthodontics; infection control; hepatitis and AIDS; periodontics; endodontics; practice management, dental materials and much more.

Many of the lectures will be housed in the Ottawa Congress Centre, a facility conveniently linked to the Westin Hotel and a short jaunt away from the Chateau Laurier. Although all the action won't be under one roof, the 1990 Convention Committee will develop creative and innovative ways to link convention traffic and delegates to the three key convention zones. It promises to be an exciting challenge and I am confident the success we met in Vancouver will follow us to the heart of the nation.

Saturday, August 25th to Wednesday, August 29th 1990 — OTTAWA. . . Remember, it's easier to re-schedule patients than to cancel them!! Δ

Dr. LeBlanc was a member of advisory board and past president of the Board of Directors of the East End Boys' Club and a member of the board of directors of the Boys' Club of Canada. He was a past president of Moncton's Richelieu Club, his local home and school association, the BMW Motorcycle Association, the Moncton and District Concert Band and was a founding president of his parish lay committee.

Dr. LeBlanc died in Moncton's Dr. Georges L. Dumont Hospital, where he had served as chief of the dental staff for the past eight years. Δ

Did you know?

Teen Problems are Directly Proportional to Marijuana Use

Information from Drug Abuse Update, September 1987 indicates that with marijuana use poor grades increase from 31 to 89 per cent; conflict with parents from 46 to 92 per cent; depression from 17 to 60 per cent; and, alarmingly, suicide attempts from 0 to 27 per cent.

Dental officers graduate at CF Base Borden

At the 1989 graduation ceremonies of the Dental Officer Training Plan (DOTP) Phase III Course candidates, held at Canadian Forces Base Borden, Brigadier-General J.F. Begin, Director General of Dental Services, served as Reviewing Officer for the parade. Other distinguished guests present for the occasion were: Brigadier-General (Retired) and Past President of the CDA, Dr. W.R. Thompson, who serves as the Colonel-Commandant of the Dental Services; Dr. J. Niedermayer, then President of the CDA; Mr. J. Gillies, Executive Director of the Ontario Dental Association; Major (Retired) G.C. Hunt, President of the Royal Canadian Dental Corps Association; Colonel (Retired) M. Donely, a former Commandant of Canadian Forces Dental Services School (CFDSS) and Brigadier-General (Retired) J. Wright and Colonel D. Jones, both in attendance at the graduation ceremonies of their daughter and son respectively. The host of the event was Colonel E.D. Cragg, Commandant of CFDSS.

The directing staff for the course this year were Major C.J. Cormier as Course Director, Captain F. Létourneau as Assistant Course Director, Chief Warrant Officer R.A. Gayler as Field Exercise Coordinator, Warrant Officer M.S.C. Isabelle as Course NCM and Captain J. Patterson as Administrative Officer.

Graduates

Candidates are recognized for their achievements at a graduation parade. Brigadier-General J.F. Begin was Reviewing Officer and presented graduation certificates to the following students: Captain R.R. Groves, University of Saskatchewan; Captain M. Prager, Dalhousie University; Captain L. Reich, University of Alberta; 2Lt M.R. Bishop, Dalhousie University; 2Lt J.G.G. Caron, Université de Montréal; 2Lt D.M. Carter, Dalhousie University; 2Lt G.A. Clark, University of Toronto; 2Lt M.A.M. Couture, Laval University; 2Lt R.D. Gagnon, Université de Montréal; 2Lt S.J. Gough, University of Alberta; 2Lt D.T. Jones, University of British Columbia; 2Lt J.S. Kean, Dalhousie University; 2Lt C.J. Keim, University of British Columbia; 2Lt M.A. Knopp, Université de Montréal; 2Lt S.T. Molyneaux, University of Western Ontario; 2Lt M.N. Morin, Université de Montréal; 2Lt B.T. Nguyen,



Brigadier General J.F. Begin, Director General of Dental Services, congratulates 2Lt Todd Jones, of the University of British Columbia. His father Colonel Dave Jones, Director of Dental Operations and Training presented him with his scroll.



Brigadier General (Retired) James Wright, immediate past Director General of Dental Services hands his daughter, 2Lt Tammy Wright, University of Manitoba, her graduation certificate.

Laval University; 2Lt J.C.E. Trudel, Université de Montréal; 2Lt K.M. Walsh, Dalhousie University, and 2Lt T.L. Wright, University of Manitoba.

Awards

Brigadier-General Begin presented the Honour Candidate Trophy to 2Lt M.A. Knopp of the Université de Montréal. The Field Exercise Trophy was won by 2Lt J.G.G. Caron of the Université de Montréal.

Mess Dinner

One of the highlights of the graduation ceremonies was the mess dinner. The evening included an address by then President of the CDA, Dr. J. Niedermayer to the graduating candidates. Dr. Niedermayer discussed the importance of professionalism in the current practice of dentistry and the contribution the military dental program makes to organized dentistry in Canada. Δ

ADM David Nicholson leaves Medical Services Branch

It was CDA's loss and PEI's gain as a well-respected colleague in the federal government accepted a new post. Mr. Dave Nicholson, Assistant Deputy Minister of Medical Services Branch at Health and Welfare Canada became Assistant Deputy Minister of Programs at the Department of Veterans Affairs in Charlottetown this August.



Mr. David Nicholson

The Canadian Dental Association works with the Medical Services Branch to help bring dental services to natives in remote parts of Canada. The sub-committee is chaired by Dr. Bradley Holmes of Kenora, Ontario, a past-president of the CDA.

The job was made much easier by Mr. Nicholson's comfortable, easy manner, according to Dr. Holmes. He credits Nicholson with opening the door to government relations.

"Dave was 'a breath of fresh air'. He was fun to work with, an 'all-round nice guy.' We didn't always get what we wanted, but we always knew where we stood," says Dr. Holmes.

Born in the Maritimes, Mr. Nicholson is now back in his home province. We wish him well. Δ

Meet the CDA Headquarters Staff

ACCREDITATION AND EDUCATION



Left to right are: Lorraine Emmerson, Coordinator of Accreditation; Doris Holmes, department secretary, and Brian Henderson, Director of Education and Accreditation.

Brian Henderson was appointed CDA Director of Education and Accreditation in November 1983. Working with the CDA Councils on Education and Accreditation he carries overall responsibility for CDA's accreditation processes and supervises on-site accreditation survey teams visiting programs in undergraduate dentistry and the dental specialties as well as dental internships and institutional dental services.

Lorraine Emmerson, Coordinator of Accreditation, has been responsible since 1984 for making all arrangements for on-site accreditation surveys including surveyor's travel and accommodation as well as survey documentation. Mrs. Emmerson also supervises typing and production of resulting survey reports.

Mrs. Doris Holmes, department secretary, has provided related typing and clerical support over the same period of time. Δ

HELP CANADIANS BREATHE EASY.

Support Christmas Seals

Give to your Lung Association

Harvard offers new predoctoral implant dentistry program

The Harvard University School of Dental Medicine's Department of Implant Dentistry is offering predoctoral students a program which will teach them how to perform implants.

Department Head and Associate Professor, Paul A. Schnitman, DDS, MS, feels that because the demand for dental implants is increasing at a rapid rate, predoctoral students should develop an appreciation for the complexity of implant dentistry and realize the need to further their education in this area.

"Although many schools are offering predoctoral lecture series, we believe Harvard's predoctoral program is the first in which students can actually elect to perform surgical implant placement including diagnosis and treatment planning, restoration of the implant, and follow-up and maintenance procedures," Schnitman says.

The program teaches the Branemark System of Dental Implants, the first and only implant technology to receive full acceptance from the American Dental Association for use in selected fully edentulous patients.

The predoctoral rotation in implant dentistry takes place in a clinical setting and students receive one-on-one training with professors and implant specialists over a course of 320 hours.

Implant dentistry is becoming a major component in dental practices. To date, the number of implants inserted has increased four-fold since 1983. It is expected that by 1992, 300,000 dental implants will be placed.

Gain familiarity with concepts

Dr. Schnitman says, "We don't expect students to leave the predoctoral treatment program fully trained in implant dentistry and ready to perform implants for the public. But they should leave having a familiarity with the concepts and complexities of dental implants and a desire to obtain further training." Furthermore, he says, the Harvard teaching program provides the public with implants they could not afford otherwise.

The Harvard School of Dental Medicine was the first to establish a Department of Implant Dentistry. It was organized in 1984 to advance the field. △

N.S. dentist dies in hayride tragedy

Dr. John Paul Laba, 34, an oral and maxillofacial surgeon who was practising in Kentville, Nova Scotia, died on the Thanksgiving weekend, along with two of his daughters, in a family hayride accident near Moncton, New Brunswick. Thirteen died in the accident.

At the time of writing, Dr. Laba's wife was still in a New Brunswick hospital, with serious injuries.

Dr. Laba was a dentistry graduate from Dalhousie University in 1979, where he was awarded the University Medal for the highest average.

He practised in Halifax from 1979 to 1980.

In Kentville, he established the Blanchard Fraser Memorial Hospital's oral surgery department, in 1983.

He was admitted to the Royal College of Dentists of Canada in Oral Surgery, in 1987.

Active in NSDA

Dr. Laba had been very active as a member of the Nova Scotia Dental Association and will be "very sorely missed" said NSDA Executive Director Don Pamenter.

He had served as a member of the Nova Scotia Dental Association's Executive Committee for the past four years.

The tragedy occurred when a logging truck slid and overturned at a curve, spilling the logs onto the wagons filled with adults and children on a family hayride. △

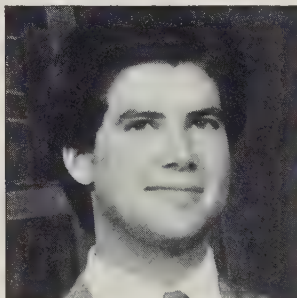
Missing Person

On October 22, 1984, Ian David MacKeigan left his sister's apartment in Halifax, Nova Scotia with the parting words "See you later". Neither Ian nor the car he was driving (a red 1979 Plymouth Horizon TC-3, plate 57-34-81NS) have ever been found.

Ian was a very ordinary young man with good family relationships. The evening he disappeared, he didn't pack a bag, had little cash on his person and his bank account remains untouched.

Anyone who may become aware of information concerning this missing person or unidentified remains fitting the description, is asked to please contact the Halifax Police Department, or the nearest detachment of the RCMP, or, write to:

Wallace B. MacKeigan, DDS,
P.O. Box 148,
Sydney Mines, N.S., B1V 2Y4 △



Ian David MacKeigan

Date of Birth: Dec. 19, 1962

Height: 5' 10 1/2"

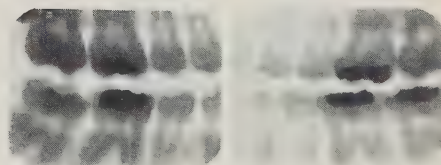
Weight: 180 lbs.

Hair: Medium brown

Eyes: Bluish-green

Dental Record

Amalgam fillings on occlusal surfaces of 16, 26, 36, 37, 46. 8s unerupted in 1984.



Clinical Research Award

Salt/peroxide regimen, conventional hygiene, effectiveness studied

A research team from the Division of Periodontology at the University of Minnesota School of Dentistry has received the Clinical Research Award from the American Academy of Periodontology (AAP).

The Clinical Research Award is given annually by the Academy in recognition of outstanding research articles that have an immediate application for periodontists and their patients.

The winning team's two-year study, entitled "Salt and Peroxide Compared with Conventional Oral Hygiene, Parts I, II and III," provided evidence indicating that both conventional oral hygiene and salt/peroxide regimens, when combined with professional care, are equally effective in reducing clinical signs of periodontal disease.

"A lot of public attention has centered around the positive effects of using the salt/peroxide (baking soda) solution for daily use — which can be applied to the gums in much the same way as toothpaste — instead of using conventional methods such as brushing with toothpaste and flossing. Yet very little research had been done to indicate whether or not one method was more effective than the other," said Dr. Larry F. Wolff, D.D.S., principal researcher and co-author of the study. "Our study proved that there is no clinical difference in the effectiveness of either method."

A total of 231 individuals were evaluated on: 1) clinical assessments, 2) the subgingival microflora and 3) patient compliance and acceptance. Each individual was assigned to one of two home-treatment regimens, using either conventional oral hygiene or the salt/peroxide solution. Measurements of plaque, gingival inflammation, probing depth and attachment levels were taken at baseline, eight, 16, and 24 months. Participants in the study were recalled for reinforcement of oral hygiene and periodontal prophylaxis at various intervals, while compliance and acceptance of the two oral hygiene regimens were determined at 24 months, using a structured, self-administered questionnaire.

The main conclusion of the study was that both methods are effective in reducing clinical signs of periodontal disease, Wolff said.

"I cannot stress enough the importance of professional care in this study," said Wolff. "Without proper professional and home care for your teeth and gums, neither method will be effective."

The three-part study was printed in the May 1987 *Journal of Periodontology*. Δ

Did you know?

Over 3,300,000 Canadians, 13.8 per cent of the population, have some level of disability. Using the WHO definition:

"any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being"

A recent Statistics Canada survey indicated:

- * disability rates increased with age from 5.2 per cent for children to 45.5 per cent for adults over 65.
- * just under 40 per cent of disabled adults aged 15 to 64 were employed compared to 70 per cent of non-disabled.
- * 16 per cent of seniors over 65 resided in institutions.

CDA Retirement Savings Plan

Unit values: (Funds are valued weekly)

Fund	Unit values as at	
	October 31, 1989	September 29, 1989
Bond & Mortgage Fund	70.83070	69.42253
Common Stock Fund	17.04873	17.31437
Money Market Fund	46.75809	46.37363
Balanced Fund	29.85361	29.83614

G.I.C. Fund Term

Term	*Interest rates as at	
	October 31, 1989	September 29, 1989
1 yr	11.35%	11.10%
2 yr	10.75%	10.80%
3 yr	10.60%	10.55%
4 yr	10.60%	10.55%
5 yr	10.60%	10.55%

(*rates subject to change without notice.)

Total Assets (Market value) of the Plan as of:

October 31, 1989	September 29, 1989
\$116,422,541	\$116,780,319

For further information:



CDA RSP

Write:

CDSPI

Retirement Services Dept.
Suite 600
2 Lansing Square
Willowdale, Ontario
M2J 4Z3

or phone, toll-free:

Western and Atlantic Canada
and Ontario Area Code 807
only 1-800-268-5418
Quebec and Ontario, (except Area
Code 807) 1-800-268-3411
Metro Toronto Area 497-7117

Susan D. Matheson, Associate Director, Education and Accreditation, is a recent appointee at CDA headquarters in Ottawa. Her responsibilities include the accreditation of dental auxiliary programs and serving as a coordinator to the Third Party Dental Plans Committee.



Susan D. Matheson, RDH, BScD, MEd

Ms. Matheson received her Diploma in Dental Hygiene from Dalhousie University in 1977, and in 1982, a BScD in Dental Hygiene from the University of Toronto. In 1987, she was awarded her MEd degree from Brock University, St. Catharines, Ontario.

Susan has been extensively involved in dental hygiene education. From 1982 to 1986 she was a teaching master in the Dental Assistant and Dental Hygiene programs at Niagara College of Applied Arts and Technology, Welland, Ontario.

Ms. Matheson was the Coordinator of the Dental Hygiene program at the Niagara College from 1986 to 1988.

Prior to her career at Niagara College, Susan was employed as a dental hygienist in various practice settings in Nova Scotia and Ontario.

Ms. Matheson has served as a director to both the Ontario Dental Hygienists' Association and the Canadian Dental Hygienists' Association and was an ODHA Executive Committee member from 1986 to 1989. Susan has also been a member of the Canadian Dental Association's accreditation visit teams. △

Dr. Peter M. Pronych, Acting Chairman, Department of Pediatric and Community Dentistry, and Head, Division of Pediatric Dentistry, Faculty of Dentistry, Dalhousie University, Halifax, was recently installed as President of the Canadian Academy

of Pediatric Dentistry, at the annual meeting held in Vancouver.



Peter M. Pronych, BA, DDS, MS

The Past-President is Dr. Arlington Dundy of Ottawa. The new President-Elect is Dr. J. Victor Legault of Montréal and the Secretary is Dr. Murray Diner (continuing in that role) also of Montréal. The Treasurer is Dr. Stephane Schwartz of Montréal. Dr. Schwartz is recognized as the first female pediatric dentist to become a member of the Executive.

Dr. Pronych is a graduate of the University of Saskatchewan (BA, 1961) Dalhousie University, Halifax (DDS, 1968) and Ohio State University (MS, 1970).

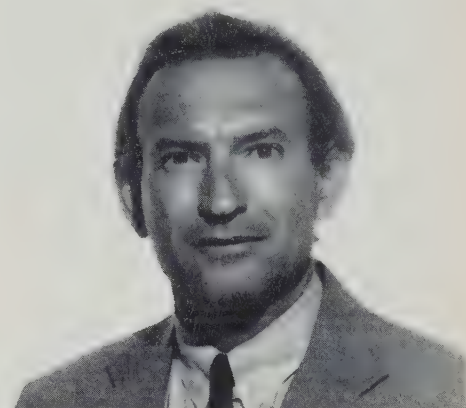
Dr. Pronych served as a regular officer in the Royal Canadian Navy until 1964, when he joined the Naval Reserve and entered dental school at Dalhousie. He conducted a full time private practice in the specialty of Pediatric Dentistry until 1972, when he joined the Dalhousie Faculty of Dentistry full time. He was Head, Division of Pediatric Dentistry from 1978 to 1986. He is also a staff member at the Izaak Walton Killam Childrens' Hospital and Grace Maternity Hospital and continues to conduct a part time private practice. △

Dr. Jack G. Zosky of Toronto, has been recently elected President of the Canadian Association of Oral and Maxillofacial Surgeons.

Other officers elected at the Association's convention in Montréal, are: Dr. Bernard Lyons of Windsor, Ontario, Past-President; Dr. Aaron Gonshor of Montréal, President-Elect; Dr. Thomas Stevenson of Edmonton, as Secretary, and Dr. Phillip Cyr of Halifax, as Treasurer.

Dr. Zosky graduated from the Univer-

sity of Toronto (DDS) in 1964 and took graduate training in Oral and Maxillofacial Surgery at Northwestern University, Chicago. He became a Fellow of the Royal College of Dentists of Canada in 1970, and a Fellow of the International Association of Oral and Maxillofacial Surgeons in 1986. He has served as an examiner for the Royal College specialty section in his specialty. Dr. Zosky has also been an associate in the Oral Surgery Department, Faculty of Dentistry, University of Toronto for 20 years. He is Chief of Oral and Maxillofacial Surgery at a Toronto hospital. △



Jack G. Zosky, DDS, FRCD(c)

Dentsply and the All-Union Scientific Industrial Association Stomatologia of the USSR formed a joint venture for the production of dental products within the USSR, the first venture of its kind in the dental industry.

The joint venture will lead to the production of several dental products within the Soviet Union and the sale of those products within the USSR and other countries.

The new enterprise will initially produce modern composite restorative materials. The products will be manufactured in Kharkov, USSR, in an existing facility, which will be equipped with modern, state-of-the-art production equipment and quality control laboratories.

In addition, Dentsply will establish educational centres in major Russian cities to train Soviet dentists and dental laboratory technicians in the use of the new products. The company noted that there are approximately 120,000 stomatologists (dentists) and 40,000 dental laboratory technicians in the USSR serving a population estimated at 280 million. △

— ADA 'Update'

The DAP Advisor offers information, ideas and advice to improve dentist/patient communication, raise awareness about good dental health, and help your practice become busier.

Action Speaks Louder

Last month we looked at your office's role in communicating the prevention message. We saw how, by supplying dental health material in your waiting room, and posting dental health messages on walls and bulletin boards, your office can become a powerful vehicle to convey information about — and reinforce the value of — good dental health.

So now you've posted the messages and put the pamphlets, brochures and other written materials in place. Now what do you do?

Well, you might want to draw your patients' attention to this material. In that way, you can help reinforce dental health messages you deliver verbally. And since, as a 1988 Gallup Survey has shown, most of your patients see you as their primary source of information about dental health, they will probably be quite receptive if you point out material you consider particularly informative.

You'll find, if you decide to take this more active approach, that it doesn't require a whole lot more effort. In fact, it's mostly a matter of knowing what to do. To help get you started — or help keep you going if you've already begun — here are five ways to bring patients and written material closer together.

Five Ways to Deliver the Prevention Message in Writing

1. Have your receptionist encourage people to read dental health materials (pamphlets, brochures, dental health information clipped from newspapers and posted on your bulletin board) while waiting for their appointment.
2. Have the receptionist hand out material to patients as they're leaving. This material can be about dental health in general, or pertain specifically to something you and the patient have discussed during the appointment — the proper way to floss, say.
3. Make copies of a newspaper or magazine article about dental health that you think is particularly relevant or informative and have your receptionist circulate it to patients while they wait for appointments or prepare to leave.
4. Mention this material yourself. Tell your patients about ones that pertain to their needs, and encourage them to pick them up on the way out.
5. Consider extending your reach beyond your office walls by sending patients relevant material by mail.

The CDA has a variety of timely, relevant materials to bring the prevention message to your patients. Here's a brief description of just a few:

- **First Teeth:** a booklet to help parents establish their childrens' good dental health right from the start.
- **What Every Adult Should Know about Dental Health:** this one's for grownups — an informative pamphlet about maintaining good dental health.
- **The Consumer's Guide to Dental Care:** a guide that helps patients make wise choices about their dental health.
- **The Five Point Prevention Plan:** originally a magazine supplement, these are the five steps that enable people to maintain lifelong dental health.

These and many other materials are available through the CDA catalogue. You can order them by calling the CDA's toll-free phone numbers:

1-800-267-6354

(Western Canada, Labrador and Newfoundland)

1-800-267-6364

(Eastern Canada)

The DAP Advisor is a service of CDA's Dental Awareness Program, an ongoing campaign dedicated to helping all Canadians keep their teeth Good For Life.



FACE FACTS...

Orolabial herpes can be more than just a "cold sore."

Recurrent herpetic lesions of the lip and mouth are of immediate medical concern in immunocompromised patients with nonlife-threatening cutaneous herpes infections, and can be the cause of long-term psychosocial problems.

These individuals can greatly benefit from prompt recognition and therapy with

ZOVIRAX Ointment 5% ... to stop viral replication, speed healing, and reduce the severity of accompanying pain.¹

The efficacy of ZOVIRAX is enhanced by prompt administration. So be sure to prescribe enough this time, so it's available for patients to use at the earliest onset of symptoms next time.

Now when faced with orolabial herpes... there's ZOVIRAX.

(acyclovir)

ZOVIRAX
OINTMENT 5%
(4 g and 15 g tubes)

Effective Suppression of Viral Expression

PAAB
CCPP

*Trade Mark
ZOV-8906



WELLCOME MEDICAL DIVISION
BURROUGHS WELLCOME INC
KIRKLAND, QUE



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Too often we put off doing the things we know we should do because we "don't have time". We think it will be worth your while to make time.

Take one day and block it off your calendar. Take that day just for yourself, your family and your practice. Devote that day to evaluating your current insurance coverage and bringing it up to date. Then you will have the security of knowing that your family will be looked after if anything should happen to you, that your livelihood will be protected if your dental office is damaged by fire or flood and that your savings will not be at risk if you should be hit with a large lawsuit. Think about it. Think of the peace of mind. Do it! It's only one day, but it could make all the difference to your future.

P.S. When you sit down to evaluate your insurance, call us if we can help you. That's what CDSPI is here for.



For further information call CDSPI toll free, and a Personal Service Representative will be pleased to assist you.

1-800-268-5418 Western Canada, Atlantic Canada and Ontario Area Code 807

1-800-268-3411 Québec and Ontario **except** Area Code 807

497-7117 Metro Toronto

This material has been approved by our consultants/brokers and insurers.

Continuing Education

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FACULTY OF DENTISTRY

Halifax, N.S.
B3H 3J5

CONTACT PERSON/TELEPHONE:
Kate MacDonald
(902) 424-1674

LOCATION/ DATE	COURSE TITLE	SUBJECT AREA	INSTRUCTOR	REGISTRATION	FEE	AUDIENCE
Halifax, N.S. Jan. 12, 1990	Clinical Application and Handling of Selected Materials in Restorative Dentistry	Dental Materials and Devices	Dr. Richard Price and Dr. Elliott Sutow	Limited to 16	TBA	GPs Dental Assistants
Halifax, N.S. Jan. 19, 20, 1990	TMJ Disorders The Joint Approach	TMJ Disorders	Dr. A. Elgeneidy Dr. Andrew Thompson		TBA	GPs
Western Caribbean Cruise Jan. 20-27	Update in Dentistry (Sponsors: Dalhousie, McGill, Toronto and University of Alabama)	Dental Update & Cruise	Dr. Lewis Menaker Coordinator	Open	\$300 (DDS) \$125 (Aux.) (Tuition)	GPs Specialists Assistants Hygienists Lab. Technicians
Halifax, N.S. February 9, 1990	Practical Review of Radiology for General Practice	Oral Radiology	Dr. John Lovas Dr. Michael Pharoah		TBA	
Mont Ste. Anne Québec February 21-25	Techniques for Achieving Excellence in Restorative Dentistry	Restorative Dentistry (Dalhousie Ski Seminar)	Dalhousie Dental Faculty members.		TBA	GPs Assistants Hygienists
Halifax, N.S. March 30, 31	Retreatment in Dentistry — A Reality of Practice	Endodontics Periodontics Operative Dentistry Prosthodontics Orthodontics	Dr. C. Bain Dr. K. Zakariasen	Open	TBA	GPs Specialists Hygienists
Halifax, N.S. April 6, 1990	Clinical Techniques for Successful Crown and Bridge Restorations	Prosthodontics (Fixed)			TBA	GPs
Halifax, N.S. May 26, 1990	Business and Clinical Management Strategies	Practice Management	Sally McKenzie	Open	TBA	GPs Specialists Assistants Hygienists Business Staff
Halifax, N.S. June 9, 1990	Aging Mouth — What do we do with it	Geriatric Dentistry	Dr. James Brudvick	Open	TBA	GPs Assistants Hygienists Lab Technicians
The Pines Resort Digby, N.S. July 13-15, 1990	Managing Stress	Stress Management	Dr. Ian Vogan	Limited to 60	TBA	GPs Specialists Assistants Hygienists Spouses

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740 Docteur Penfield Blvd.
Montréal, Qué. H3A 1A4

CONTACT PERSON/TELEPHONE:
Mrs. Olga Chodan
(514) 398-5255

LOCATION/ DATE	COURSE TITLE	SUBJECT AREA	INSTRUCTOR	REGISTRATION	FEE	AUDIENCE
Montréal January 8, 1990	A Radiology Review and Update	Oral Radiology	Dr. Marie Dagenais	Limited to 35	Tuition \$150	GPs Assistants Hygienists
Montréal, January 12	Improving the Quality of Restorations: A View from the Laboratory Side	Operative Dentistry Prosthodontics	Mr. Mike Schreck	Limited to 35	Tuition \$150	GPs Assistants Hygienists

Montréal January 20-27	Update in Dentistry: Programs for the Generalist, Specialist and Auxiliaries	Dental Materials and Devices Prosthodontics	Drs. D. Kepron & K. Leinfelder	Limited to 35	Tuition \$350 (U.S.)	GPs Specialists
Montréal January 26	Treating Your Practice Like a Business: Cash Flow Strategies for Increased Profit	Practice Management	Dr. Carl Caplan	Limited to 35	Tuition \$150	GPs Business Managers
Montréal February 9	Clinical Orthodontics for the General Practitioner	Orthodontics	Dr. H. Levitt Dr. M. Wechsler	Limited to 35	Tuition \$150	GPs
Montréal March 9	Treatment Planning for the Removable Prosthodontics Case	Prosthodontics	Dr. Nasser Dibai Dr. Peter Woolhouse	Limited to 35	Tuition \$150	GPs
Montréal March 30	An Update in Periodontics for General Practitioners	Periodontics	The Periodontics Staff	Limited to 35	Tuition \$150	GPs Assistants Hygienists
Montréal May 11	TMJ Dysfunction: Occlusal Factors and the Adaptive Temporomandibular Joint		TBA	Limited to 35	Tuition \$175	GPs Specialists

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Jennifer White
(416) 979-4503

LOCATION/ DATE	COURSE TITLE	SUBJECT AREA	INSTRUCTOR	REGISTRATION	FEE	AUDIENCE
Toronto January, 1990 to December, 1991	Comprehensive Dentistry Program	General Dentistry		Limited to 24	Weekend session \$350 Full program fee \$8,400	GPs
Toronto, Ont. January 19, 1990	Periodontology Symposium	Periodontics	Dr. E. Freeman	Open	\$295 DDS \$150 Auxiliaries	GPs Specialists Assistants Hygienists
Toronto, Ont. Feb. 10, 1990	Photography in Dentistry	Dental Photography	Rita Bauer	Limited to 12	\$195 DDS \$150 Auxiliaries	GPs Specialists Assistants Hygienists Lab. Technicians
Toronto, Ont. February 23	Mandibular Assymetries Encountered in Daily Orthodontics Practice	Orthodontics	Dr. D.G. Woodside	Limited to 24	Tuition \$295	GPs Specialists
Palm Springs California March 11-18	Oral Surgery for the General Practitioner Palm Springs Seminars	Oral and Maxillofacial Surgery		Open	TBA	GPs Specialists Assistants Hygienists Lab. Technicians
Toronto, Ont. To April, 1990	Endodontics Evening Seminars	Endodontics	Dr. B.H. Korzen	Limited to 20	\$100 per session \$550 for entire program	GPs Assistants
Toronto, Ont. January to April	Pediatric Evening Seminars	Pediatric Dentistry	Dr. Norman Levine coordinator	Limited to 24	\$100 per session	GPs Specialists Assistants Hygienists
Toronto, Ont. January to April	Dental Hygiene Evening Series	Dental Hygiene	Mai Pohlak	Limited to 24	Tuition \$350	Hygienists

Toronto, Ont. Date TBA	Advances in Osseointegration	Prosthodontics	Dr. George Zarb	TBA	GPs Specialists
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Mrs. Najet A. Hassan
(519) 679-2111 Ext. 6136

LOCATION/ DATE	COURSE TITLE	SUBJECT AREA	INSTRUCTOR	REGISTRATION	FEE	AUDIENCE
London, Ont. January 27, 1990	Update '90. "For Those who are Current and Want to Remain Current"	General Dentistry	Dr. G.Z. Wright Course Director	Open	\$175	GPs Assistants Hygienists Other
London, Ont. February 16	Orthodontics in General Practice	Orthodontics	Dr. A.H. Mamandras Course Director	Limited to 20	\$195	GPs
London, Ont. Feb. 22, 23, 24	Nitrous Oxide Oxygen- Conscious Sedation	Pain Management	Dr. Ian Schofield Course Director	Limited to 20	\$400	GPs Specialists
London, Ont. March 2, 3	Aesthetic Dentistry Challenge for the 90s	Prosthodontics	Dr. D.R. Gratton Course Director	Limited to 30	\$525	GPs
London, Ont. March 29, 30, 31	Removable Partial Dentures	Prosthodontics	Dr. P.S. Sills	Limited to 20	\$450	GPs
London, Ont. April 7, 1990	Dental Hygienist Update	Dental Hygiene	Dr. G.Z. Wright Course Director	Open	\$85	Hygienists
London, Ont. April 20, 1990	Management of Life- Threatening Medical Emergencies in the Dental Office	Emergency Dentistry	Dr. L. George Upton	Open	\$225 DDS \$95 (Auxiliary with dentist)	GPs Assistants Hygienists
London, Ont. April 21, 1990	High Tech Root Canal Preparation and Obturation	Endodontics	Dr. Howard Martin	Limited to 30	\$250	GPs
London, Ont. April 26, 27	Osseointegration in Clinical Dentistry	Implants	Dr. George A. Zarb Dr. D.H. Charles	Limited to 30	\$1,000	GPs Specialists

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Mrs. Darcy Duggan
(204) 788-6331

LOCATION/ DATE	COURSE TITLE	SUBJECT AREA	INSTRUCTOR	REGISTRATION	FEE	AUDIENCE
Winnipeg, Man. Jan. 13, 1990	C.P.R. for the Dental Team	Emergencies in the Dental Office	Dr. Ron Boyar Mrs. Janice Wood	Limited to 20	\$60	GPs Specialists Assistants Hygienists
Winnipeg, Man. Feb. 3, 10, 24	Molar Endodontics for the General Practitioner	Endodontics	Dr. Marshall Peikoff	Limited to 12	\$750	GPs
Winnipeg, Man. March 2, 3	Implants: Realities and Practicalities	Prosthodontics	Dr. W.B. Love	Limited Attendance	\$400	GPs Specialists
Winnipeg, Man. Part I — March 23 Part II — March 24, 31 April 7	Periodontal Surgery Parts I and II	Periodontics	Dr. Vijay Pruthi	Part II Limited to 12 Part I Open	Part I \$75 Parts I & II \$400	GPs (Parts I & II) Hygienists (Part I)
Winnipeg, Man. March 17	Enlightened Clinical Dentistry in the 1990s	Pedodontics	Dr. Theodore Croll	Open	\$115	GPs Specialists Assistants Hygienists

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LOCATION/ DATE	COURSE TITLE	SUBJECT AREA	INSTRUCTOR	REGISTRATION	FEE	AUDIENCE
Western Caribbean Jan. 20-27 In conjunction with University of Alabama	Update in Dentistry Caribbean Cruise and Course	Dental Update	Dr. D.B. Gilboe Dr. S.J. Filler and associates	Open	Dentists \$300 (U.S.) Auxiliaries \$125 (U.S.) (Tuition)	GPs Specialists Assistants Hygienists Lab. Technicians Others
Edmonton, Alta. February 10	Behavior Management and Clinical Procedures for the Child Patient	Pedodontics	Dr. H. ElBadrawy Dr. D. Bédard	Open	TBA	GPs Specialists Assistants Hygienists Lab. Technicians
Edmonton, Alta. March 31	Restorative Dentistry: Concepts, Materials & Techniques	Prosthodontics	Dr. J. Gerrow	Open	TBA	GPs Specialists Assistants Hygienists Lab. Technicians Other
Calgary, Alta. April 6	Hygiene Refresher Course	Dental Hygiene	Ms. Barbara Zier Ms. J.F. Pimlott	Open	TBA	Hygienists
Edmonton, Alta. April 28	Esthetic Restorative Dentistry	Operative Dentistry	Dr. Denehey	Open	TBA	GPs Specialists Assistants Hygienists Lab. Technicians
Edmonton, Alta. May 4 May 18	Porcelain Veneers: A Participation Program	Operative Dentistry	Dr. C. Osadetz and Dr. D. Dederich	Limited Attendance	TBA	GPs Specialists
Edmonton, Alta. May 11, 12	Advanced Prosthetic & Surgical Concepts in Implantology — A Participation Program	Prosthodontics (Fixed)	Dr. K. Compton Dr. C. Robinson	Limited Attendance	TBA	GPs Specialists
Edmonton, Alta. May 31, June 1	Root Planing Therapy A Participation Program	Dental Hygiene	Ms. J. Pimlott Ms. Barbara Zier	Limited Attendance	TBA	GPs Specialists Hygienists

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LOCATION/ DATE	COURSE TITLE	SUBJECT AREA	INSTRUCTOR	REGISTRATION	FEE	AUDIENCE
Vancouver January 27, 1990	Is Your Patient At Risk?	Oral Medicine/ Diagnosis	Dr. Myer Leonard	Open	Dentists \$125 Auxiliaries \$75	GPs Specialists Assistants Hygienists
Vancouver February 3	Advanced Endodontics in General Practice	Endodontics	Dr. John Diggins Course Coordinator	Open	Dentists \$125 Auxiliaries \$75	GPs Specialists Assistants Hygienists
Vernon, B.C. March 3	Future Periodontal Concepts for the Dental Team	Periodontics	Dr. Kenneth K.S. Lee	Limited Attendance	TBA	GPs Specialists Assistants Hygienists

Vernon, B.C. March 4	Cancer Treatment in the 1990s	Oral Medicine/ Diagnosis	Dr. Peter Stevenson-Moore	Limited Attendance	TBA	GPs Specialists Assistants Hygienists
Vernon, B.C. March 5	Prosthetic Considerations in Osseointegration	Oral Rehabilitation	Dr. Peter Stevenson-Moore	Limited	TBA	GPs Specialists Assistants Hygienists
Vancouver March 17	Current Concepts in TMJ	Occlusion	Dr. Charles Green	Open	Dentists \$125 Auxiliaries \$75	GPs Specialists Assistants Hygienists
Vancouver March 24	Restorative Dentistry Concepts, Material and Techniques	Prosthodontics	Dr. Jack D. Gerrow	Open	Dentists \$125 Auxiliaries \$75	GPs Specialists Assistants Hygienists
Vancouver March 31	Orthodontics for the General Practitioner	Orthodontics	Dr. Donald G. Woodside	Open	Dentists \$125 Auxiliaries \$75	GPs Specialists Assistants Hygienists
Vancouver April 7	Glass Ionomers 1990: The Why, What, When, Where and How	Dental Materials and Devices	Dr. Ebb A. Berry III	Open	TBA	GPs Specialists Assistants Hygienists

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Prelicensure Revisited

By Linda Wiltshire*

Editor's Note: The "Student Forum" is published in cooperation with the CDA Council on Student Affairs in accordance with the guidelines established within the Council.

The Journal welcomes the meaningful input from the dental students of today who will bear the responsibilities of the profession tomorrow.

Are dental students adequately prepared to assume the responsibilities of their profession at graduation? Has additional clinical training become a necessity prior to the granting of licensure? In recent years the concept of a mandatory prelicensure period has been the focus of some attention both from dental educators and students.

Prelicensure implies a period of clinical practice following basic dental education as a qualification for a professional licence. If such a program were instituted in our Canadian dental faculties could it be incorporated into the existing course of study or would it be necessary to increase the length of time spent in school? How would the dental profession benefit as a whole from the institution of prelicensure? These are a few of the issues which must be carefully considered in any discussion of prelicensure.

A professional licence is granted on the basis of competency. An authorized agency gives permission to an individual to engage in a specific profession provided a minimal degree of competency has been attained that will ensure the protection of public health and safety.¹ In Canada, professional licensure is controlled by each province. Students in Canadian dental schools are eligible for provincial licensure provided they have successfully completed the examinations set by their respective universities. In addition, a certificate is granted to each graduate by the National Dental Examining Board of Canada, on condition that the undergraduate dental program has been approved by the Council on Education and Accreditation of the CDA. This



Linda Wiltshire

certificate is portable throughout the country with the exception of Quebec, which recognizes this certificate only for those graduates who have studied within that province. The other exception is British Columbia, which places a five year limit on validity of the certificate for graduates of out-of-province programs.

The supporters of prelicensure cite the need for changes in the dental curricula. They note that **with accelerated advances in dental technology, dental schools have been forced to add more material to their courses, while the length of study has remained largely unchanged.** The result of this is a severely overcrowded curriculum which leaves students frustrated and with inadequate clinical preparation for dental practice.² One possible solution to this problem is the institution of prelicensure in the form of a six month to one year clinical rotation, without the restricting credit requirements. This would allow the students to give comprehensive care to patients in a more realistic setting.

On the other hand, it is also possible that if a serious in-depth curriculum review is undertaken, certain outmoded clinical procedures might be eliminated and repetitious information streamlined. If at the same time the basic science courses are examined carefully and critically to ensure that they benefit the dental

student's learning, some courses might be dropped or classified as prerequisites. Thus sufficient time could be made available to allow the scheduling of a pre-graduate comprehensive clinical practice within the present course of study.

One argument for changing the dental curriculum is related to the need for increased expertise in the area of oral medicine and the management of the medically compromised patient. Many factors substantiate this need, including the aging population and the increased number of geriatric patients actively seeking dental treatment at all levels. In addition to this are the chronically ill patients, who, previously were considered too ill to give dental treatment a priority. Today they are being successfully managed medically on an out-patient basis. Included in this group are cancer patients being treated by chemotherapy or radiotherapy, and those with diabetes, cardiac dysfunction and similar illnesses.

A recent survey of actively practicing dentists in the U.S.A. was carried out to determine what changes had occurred in the last five years in their private practices.³ Results indicated that whereas in the past a large part of general practice was operative dentistry, today it is more diverse and complex and will require advanced clinical skills as the trend continues. **To meet this challenge dental students must be given ample opportunity to develop diagnostic skills and to plan and execute comprehensive treatment for more complex patients.**

It is not surprising that the most vocal of those opposing prelicensure are the dental students. The prevailing reason offered by the students is the additional time required to undertake a prelicensure program. Most students feel that four years of university is sufficient (many having been there much longer). They are ready to face the real world of dental practice. In a presentation to the 1986 Prelicensure Conference, Liliane Lesaux, then Chairman of the CDA Council on Student Affairs (CSA), pointed out that most students just want to be dentists making their own daily decisions.

A prelicensure period would prolong the day when they could finally make a decision on their own, unsupervised. She suggested that **after three years there would be no significant difference in quality of care provided by those with or without a prelicensure program.**

Three years later students remain largely opposed, although a significant number of them indicated they lack enough information to make a proper decision. Surveys carried out in Canadian universities this year indicate that approximately 66 per cent of students disagree with prelicensure, while 23 per cent were undecided. The present position of the Committee on Student Affairs is that dental schools spend adequate time on clinical dentistry and that one additional year of prelicensure would not afford much additional training. Because many students now have the option of a hospital-based residency and a significant number of graduates go into associateship, it is believed that their first years do not differ greatly from a prelicensure program. The CSA encourages dental educators to examine and alter the existing programs before adding to the length.

In contrast to this is a small number of students who support the idea of prelicensure as an answer to a perceived need for greater clinical skills prior to graduation. However these students advocate a paid residency program, outside the confines of regular school curriculum.

The American Association of Dental Students polled the 1980 graduates of American dental schools on the subject of their need for additional clinical training.⁴ When asked the question, "Do you perceive a need for additional clinical training between graduation from dental school and entering private practice?", 56.9 per cent answered "yes". When asked about specific areas in which the graduates felt they would like to have additional experience, the following were most frequently chosen:

practice administration	70.0%
oral surgery	46.8%
orthodontics/periodontics	46.3%
Prosthodontics — fixed & removable	43.4%
Diagnosis & treatment planning	38.5%

Approximately three quarters of those surveyed felt that the general practice residencies, which are hospital based, could fill their need.

It would seem that **although many students feel they could benefit from**

additional clinical experience prior to graduation, particularly in the area of practice administration, they do not wish to have the length of time in school increased.

One other factor which also speaks against prelicensure is cost. Educating a dentist is expensive, both for the institution and the student, who is largely dependent upon others for financing. Increasing the length of the program of study could increase the cost for both.

The challenge facing dental educators is to market graduates who are competent professionals. **There appears to be agreement on both sides of the prelicensure argument that additional advanced clinical skills are needed in order to effectively treat the complex patients who will present more and more to the dental office.** However, extending the dental program over a longer period of time, with the additional incurred expenses, would deter some from supporting prelicensure.

It would seem to make more sense for dental faculties, in particular, curriculum committees, to undertake an in depth review of their present curricula in order to remove outdated information and allow space for a pregraduate clinical training program. If necessary, the school year could be lengthened by shortening the summer vacation to 4-6 weeks.

In addition, a survey of recent graduates of Canadian dental schools should be undertaken, with possible coordination by the Association of Canadian Faculties of Dentistry, in order to verify whether this group of inexperienced dentists feel they have been adequately prepared to practice.

If a prelicensure period is to be added to existing programs, then the format of this program should be carefully designed. Dental students are almost unanimous in their desire for a paid internship program, whatever the format. Provincial health ministries should be encouraged to find the necessary funds to manage such "internships", and the dental faculties encouraged to be creative and resourceful in planning. In addition to the existing hospital residencies, students could be placed in chronic care institutions, where an enormous need exists for oral health care. Students should also have the option of working in public health units or in research, if they wish to specialize in these areas later. One other possibility is the associateship relationship. A senior dentist approved by the dental faculty,

would act as preceptor for the student.

As we approach the 21st century, the challenge for both dental educators and the students for whose formation they are responsible is to develop health care professionals who can competently diagnose and manage the complex oral health needs of an aging population. With a creative approach we should be able to meet this objective without an extra year of study. Δ

* Linda Wiltshire is a fourth year student in the Faculty of Dentistry, McGill University, Montreal, and a CDA Student member of the Board of Governors. A native of Montreal, she has a Certificate in Education from the University of Alberta, a Diploma in Nursing from the Salvation Army General Hospital in Winnipeg and a BScN (Nursing) from the University of Montréal.

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FIRST AID TIP



WOUNDS AND BLEEDING

- Direct Pressure to stop blood flow
- Elevation to reduce blood flow
- Rest to slow the circulation. Apply direct pressure with the hand over a dressing if available. If the dressing becomes blood-soaked, do not remove it; add another and continue pressure. When bleeding is controlled, maintain pressure and secure dressings with bandages. Maintain elevation and immobilize the injured limb.



St. John Ambulance

More on 'Head and neck radiation therapy'

We would like to take the opportunity to make additional comments on the article entitled, "The Role of Dentistry in Head and Neck Radiation Therapy" by Drs. Maxymiw and Wood (Volume 55, pp. 193-198, 1989). The authors have presented a general review of oral and dental complications of head and neck radiation therapy. They have included in this review, radiotherapy that would be utilized for oral squamous cell carcinomas. They have not, however, discussed findings that occur in radiation therapy such as that used in Hodgkin's disease with mantle field radiation that includes the major salivary glands. This group of individuals are at great risk to develop persisting xerostomia to these regions. In addition, they have simplified the discussion of radiotherapy such that the tumor dose, as represented in cGy, is presented but the number of treatment episodes or fractions over which this treatment is provided was not discussed. The relative biological effects can be very different for radiation therapy dosages applied over shorter periods of time than over longer fractions.

In their discussion of management of xerostomia, the authors do not discuss pilocarpine as a single agent which has been reported of potential value in patients with xerostomia due to radiation therapy.^{1,2,3} They discussed a publication of a previous study that we have completed utilizing a combination of pilocarpine and sialor.⁴ They state that the population was too small and radiation doses range below acceptable thresholds to make adequate conclusions. We differ in this assessment. If the patient data is reviewed, it can be identified that the tumor dose and the number of fractions placed these patients at high risk for xerostomia. One patient was treated for a lymphoma with mantle field radiation, which is well known for producing xerostomia. All patients that were studied had documented xerostomia based upon resting and stimulated whole salivary flow rates. The report is a phase I/II trial where the two sialogogues were combined in patients in whom no response had been achieved with either agent alone. The effects of the combined regimen noted

were statistically significant. Thus, the sample size is not too small as a statistically significant effect was identified. However, further double blind trials are indicated.

The authors review candida infections in patients receiving radiotherapy. However, they describe the use of nystatin oral suspension as the treatment for these infections. This recommendation must be reviewed in light of substantial literature in the area of topical antifungals. The principal concern with oral antifungal preparations and specifically nystatin suspension, is its high sucrose content. This content of sucrose places patients, particularly those who are xerostomic, at an increased caries risk. The nystatin suspension due to its sucrose content may have less efficacy due to this being the principal nutrient for candida species. In addition, contact time of most rinses with the oropharynx is limited, thus potentially reducing the topical effects. The consideration of the most appropriate management for oropharyngeal candida is complex. If xerostomia is present, the rinse products are usually better tolerated. However, if xerostomia is not significant, lozenges that can be sucked intra-orally are the principal agents chosen due to increased contact time possible. If dentures are present, use of a cream application on the denture surface may also be of advantage. The azole compounds have been reported to be of increased antifungal effect and in cases slow to respond, may be a good choice. These agents include clotrimazole, miconazole, econazole and ketoconazole.^{5,6,7,8,9,10} Chlorhexidine has also been reported to have antifungal properties.¹¹ The rinse can be prepared unsweetened and may have the advantage of binding to oral surfaces resulting in more prolonged drug contact time. Other agents are under study and will certainly become available in the near future.

Due to the oral signs and symptoms that occur with candida infections, their local and regional potential spread and the possibility in immune suppressed individuals of systemic infection, dental personnel should be aware of the signs and symptoms, comfortable in making

diagnoses and understand the choice of medications currently available in its management. There is voluminous literature on topical antifungals as these infections, particularly of the oropharynx, are of importance in head and neck cancer patients, and are particularly of importance in immunosuppressed cancer patients and those with HIV related disease. Those interested may refer to a recent review on the use of antifungals.¹²

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Authors and correspondent 'missed the central issue'

I was pleased to see that the article by Maxymiw and Wood (*Volume 55 pp. 193-198, 1989*), had stimulated some correspondence and particularly a letter from Dr. Dorothy McComb which appeared in the July issue of the journal.

While there are several issues with which one might disagree contained in the original article, Dr. McComb has chosen to focus upon the single issue of the choice of restorative material for the patient with "radiation caries". Both the authors and the correspondent have missed the issue central to the management of problems resulting from radiation-induced xerostomia. There is little or no value in attempting the placement of restorative materials in teeth which are already demineralized. An attempt must first be made to replace the mineral component of tooth structure and to maintain the hardness of tooth structure before a definitive restoration of any type is placed. Although this may be successfully achieved by regular application of fluoride gel as a homecare procedure for patients with some residual salivary flow, this method is unsuccessful for patients with limited or absence of salivary flow. In these patients, a remineralizing gel application may be necessary using a custom gel carrier following every meal.¹ Scrupulous hygiene procedures are necessary before the gel is applied. This procedure is capable of restoring the mineral content of tooth to pretreatment levels, or indeed of improving the mineral content above such levels. Having improved the hardness of the tooth, it is possible to undertake more normal restorative procedures.

I was further surprised by Dr. McComb's suggestion that glass ionomer restorations might be appropriate for such patients. Glass ionomer is time consuming to manipulate, moisture sensitive, difficult to finish and is often unesthetic.² Though the content of fluoride may be beneficial, as previously stated, it does not have the wear characteristics provided by a finished composite resin. For these reasons, the final choice of restorative material must be considered with regard to all of the variables that exist in any given situation. I would therefore disagree with Dr. McComb's statement that "composite resins are not an appropriate choice for the treatment of postradiation cervical decay". This repre-

sents a very simplistic view of a complex and frustrating clinical problem that has become more common with the advent of sophisticated chemotherapy for the management of benign and malignant disease. The need for improved management of such problems is not confined to cancer treatment centres.³ The principals of management remain the same for all patients with decreased salivary flow.

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JCDA's 'Quest' article: a tongue in cheek lampoon?

I am writing in response to Rebecca Dufton's article, "Quest: Practice management or spiritual encounters?" which appeared in the July issue of the C.D.A. Journal.

Were one to scan the bibliography of the article, one might suspect that it was

written as a tongue in cheek lampoon. Otherwise, how would the editorial board allow an article based almost exclusively on newspaper articles to appear in print?

As to specific content of the article, a response might lend it credence. Rather, I would take to task the witch hunting attitude that pervades it.

Dentists, for quite some time, have hovered near the top of the list for various stress related statistics such as suicide, heart attack, and divorce. At the same time, moves to change the general atmosphere of dentistry to make it more humanistic, liveable and healthy for those practicing it are met with suspicion and mistrust. I have no idea why this is. I do know that when a practice moves toward principles that put people first, while striving for excellence in dentistry, staff and patients benefit.

It is unrealistic to suggest that everyone would be comfortable with the changes and growth involved in Quest or the many other practice management modalities available. However, it may be dangerous and unhealthy to foster an outlook that is closed minded and phobic as in Ms. Dufton's poorly researched article.

*Darryl I. Sinclair, DDS,
Victoria, B.C.*

Author's Response: The intent of the July article was to alert dentists to what had appeared (on "Quest") in various newspaper accounts across the country over the past several years. The main purpose was outlined in the concluding paragraph. R.D.

Obituaries/Nécrologie

Blackstock, Roy S.: a graduate of the Royal College of Dental Surgeons, Toronto, in 1923, Dr. Blackstock was 94. He was a veteran of World War One and had seen action at Vimy Ridge.

Choquette, Roland: Diplômé de l'École de médecine dentaire de l'Université de Montréal en 1939, le Dr Choquette a exercé sa profession à Jonquière, Québec.

Fyffe, E.D.: Dr. Fyffe was a graduate of the Faculty of Dentistry, University of Toronto, in 1940. He conducted a private practice in Picton, Ontario. He was a Life Member of the Canadian Dental Association.

Lalonde, Fernand: Diplômé de l'Université de Montréal en 1948, le Dr Lalonde a exercé sa profession à Montréal.

Markle, Ralph P.: Dr. Markle, who was 83, graduated from the University of Toronto in 1933. He conducted a private practice in the City of Toronto. He was a Life Member of the Canadian Dental Association.

Massicotte, Gérard: Diplômé de l'École de médecine dentaire de l'Université de Montréal en 1949, le Dr Massicotte a exercé sa profession à Sillery, Québec.

Teske, Daryl R.: A graduate of Loma Linda University dental school, California, Dr. Teske practiced in Fernie, British Columbia.

Periodontal Disease

Les maladies périodontales

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PERIODONTOLOGY: FROM ITS ORIGINS UP TO 1980

by Arthur-Jean Held

1989, Birkhäuser Verlag, Basel
297 pages

From time to time, there appears at the forefront of any science, an individual who, after a lifetime of preparation and study is able, by virtue of their maturity and wisdom, to present an overall historical and geo-political perspective of that science. Professor Held has written just such a treatise in which he documents some 5000 years in the historical development of the science of Periodontology.

He culled and uses 1500 references out of 6500 reviewed and this indicates the enormous scholarly effort over a period of three years that lies behind the publication of his book.

Much of the book deals with the development of Periodontology, at least in the later years, in both North America and Europe along relatively equal lines with startlingly similar emphasis on fact and foibles. This, in some respects, is his major contribution and is one which graduate students in Periodontology in North America will find most enlightening.

The dilemma in classification, nomenclature and diagnosis of periodontal diseases that exists even to the present day is discussed at length and to quote from p. 112, "In 1955, on the occasion of a meeting of the American Academy of Periodontology in San Francisco, Fleming said that the periodontist 'dwells in the misty land of 'Never, Never', a land inhabited by the practical pirates of local treatment, and the hard to observe systemic factor Indians, and all dominated by a curious Tinkerbell terminology that flits about flashing 'itis' and 'osis' and occasional 'ologies' . . . thus searching for the shadow instead of seeking the substance!'"

Res Ipsa Loquiter

While some "chapters" are less than a page long, the first 4500 years of Periodontal history are covered in 12 pages, and there is some annoying duplication in time and content sequencing, this book does take the reader on a 5000 year Odyssey that is both fascinating and enlightening. One also renews acquaint-

ance with the "illuminati" of Periodontology and is again impressed with their contributions made largely through the power of reflective thinking and use of what would today be considered rudimentary scientific instrumentation.

I recommend this book to those interested in Periodontology as a specialty and as an integral part of dentistry in its widest historical context.

This book was reviewed by:
James E. Stakiw, DMD, PhD, Dip. Perio,
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London, Ontario

DENTAL MORPHOLOGY

by Ole Carlsen

Munksgaard, Copenhagen, 1987, 194 pp.
Illustrated.

Distributed in North America by
Yearbook Medical Publishers Inc.
Chicago. Paperback. \$35.00 U.S.

The subject matter of dental anatomy forms not only the very basis of dental practice, but is also the material of comparative odontologists, anthropologists and geneticists in tracing evolutionary and racial affinities and familial lineages. These latter applications are seldom explored in standard textbooks of dental anatomy that tend to be devoted exclusively to the clinical demands of dental practice. This most recent addition to the numerous textbooks concentrating on dental morphology takes a purely anatomical approach to its topic in a meticulous descriptive analysis of the human dentition that is the culmination of a series of research projects conducted at the Royal Dental College in Copenhagen. The material analysed was drawn from a somewhat circumscribed Danish population treated at the College whose extracted teeth, some 15,000 in number, were claimed to represent "all tooth types". Although claiming to have included "only clinically relevant information" in the remarkably detailed description of 14 categories of teeth identified, the text approaches a thesis-level analysis of each tooth category. This dissertation-type format is reinforced by the rigidly repetitious descriptive divisions applied to each type of tooth — size, four surfaces, the cervical enamel line,

the root complex, the pulp chamber and root canal system.

The text provides details of minute morphological features under each of the above titles, accompanied by superb macrophotographs illustrating aspects of normal dental variation.

Despite the impressive dedication displayed by the painstaking details of the descriptions, there is a lack of context for either an anthropological or a clinical dental usage of this text. As a dental anthropological treatise, fundamental data on the subject material is missing. No distinction of the origins of the teeth based on sex or race is made, and the lack of the latter identification becomes very significant when examples of marked shovel-shaped incisors, central mandibular premolar cusps and cervical enamel extensions into molar furcations, all distinctive features of Mongoloid dental morphology, are portrayed along with the Carabelli cusp on maxillary molars, almost always absent in Mongoloid dentitions, but a distinctive feature of Caucasoid dentitions in which shovelling is minimal. No comment is made on the different frequencies of these traits in various racial groups. From a clinical dental perspective, there is an absence of any commentary on the significance of the presence or absence of cusps, tubercles or ridges and pits and fissures and their effects on masticatory ability, caries susceptibility and restorative dentistry.

No consideration has been given to dental occlusion and the relationships of the teeth to each other or the effects of attrition upon dental morphology. Accordingly, one wonders for whom this book has been written. It fails to meet the requirements of clinical relevance for the practising or aspiring dentist and is woefully deficient in dental anthropological data.

The quality art paper and attractive layout of the book are in keeping with the high publication standards of the Danish publisher. It is a remarkably reasonably-priced text that might be consulted as an additional source of dental anatomical information that unfortunately fails to exploit its full potential.

This book was reviewed by:
G.H. Sperber, BSc, BDS, MSc, PhD,
Faculty of Dentistry,
University of Alberta.

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Chemotherapeutic control of plaque and gingivitis

Robert S. Turnbull, DDS, MScD

Classic studies by Løe et al¹ and Theilade et al² have demonstrated that a causal relationship exists between bacterial dental plaque and gingivitis. In their experimental gingivitis model it was also established that gingivitis is reversible by reinstitution of adequate plaque control measures. However, many patients do not have the motivation and discipline to maintain good oral hygiene. Furthermore, some patients have impairments such as arthritis, Parkinson's disease or simply poor manual dexterity which preclude proper brushing and flossing. Thus, a mouthrinse which would help control plaque and gingivitis would be a valuable adjunct. There are a number of products available which make this claim and it can be confusing for a dental practitioner to evaluate their effectiveness.

The purpose of this article is to give an overview of the mouthrinses available, discuss their efficacy in the context of the ADA and CDA guidelines and lastly, offer indications for their use.

Guidelines

Large research efforts have been directed toward the development of anti-plaque mouthrinses intended to be used by the general public. Some products have been very heavily advertised and claims based on somewhat dubious clinical research trials. Thus, in 1986, the Council on Dental Therapeutics of the American Dental Association³ established research guidelines that a mouthrinse must fulfill in order to receive their seal of acceptance as an aid to controlling supragingival plaque and gingivitis. The Canadian Dental Association has a Committee for Consumer Products Recognition under the chairmanship of Dr. F. Michael Eggert. They developed a set of Canadian guidelines for the chemotherapeutic control of gingivitis.⁴

The CDA guidelines conform not only to the ADA guidelines, but also incorporate concepts tested through Canadian and European clinical experience with chemotherapeutic agents used in the control of gingivitis. If a manufacturer wishes a product to receive these committees' seal of acceptance and recognition they must submit their research studies for evalua-



tion. Currently in the U.S.A., *Listerine* and *Peridex* (chlorhexidine) have the Council on Dental Therapeutic's Seal of Acceptance. In Canada some products are now under review by the CDA Committee for Consumer Products Recognition. It should be made clear that both the CDA and ADA guidelines exclude from consideration the issue of the control of periodontitis. Topical chemotherapeutic agents are of little value in treating periodontitis.

A partial listing of the information that the CDA Committee for Consumer Products Recognition will require in order to evaluate a chemotherapeutic product is as follows:

The characteristics of the study population should represent the typical product user. A log must be kept of mechanical plaque control measures.

Two studies conducted by independent investigators will be required; each study is to be of a minimum of six months' duration.

Active products should be used in a normal regimen in comparison with placebo control or, where applicable, an active control. Patient assignment to study groups should be at random.

The periodontal index (Russell's Index or equivalent) must be reported for each study group at the initiation of the study. (This indicates the type of patients in which agents have been tested and ensures a balanced composition of study groups.)

Plaque and gingivitis scoring and microbiological sampling should be conducted at baseline, six months and at an intermediate time. Measurement of gingivitis is to include a measure of superficial sulcular bleeding. The basic unit of statistical analysis and reporting is to be the patient.

At the end of the study the active patient group must differ significantly from the placebo group AND also its level of gingivitis must have been reduced to at least a mean gingival index of 0.75 per patient when measured on the scale of Løe and Silness. (All patients must have clinically significant gingivitis at the beginning of the study).

Microbiological sampling should estimate plaque qualitatively in terms of microbial species in addition to indices which measure plaque quantitatively.

Microbiological and clinical monitoring should ensure that there is no overgrowth of periodontal or other oral pathogens or opportunistic organisms in the mouth during the course of the study.

The active chemotherapeutic agent in a product must be identified along with its mode of action.

The toxicological profile of products should include carcinogenicity and mutagenicity assays in addition to generally recognized tests for drug safety. The main reason for study dropouts must be recorded and reported.

The CDA and their Committee are to be commended on their leadership in this area.

Chlorhexidine

Chlorhexidine is, next to fluoride, the most intensely researched preventive agent in dentistry. Its efficacy is well established and some studies have shown plaque and gingivitis reductions as high as 50 per cent from twice-daily rinsing with a 0.12 per cent solution.⁵ Side effects such as epithelial desquamation, altered taste sensation and staining can occur from long term use. No product containing Chlorhexidine is presently available in Canada. In the United States

and the United Kingdom, Chlorhexidine-containing home care products are available on a prescription-only basis. For a more detailed discussion the reader is referred to a literature review by Fardal and Turnbull⁶ and another by Pruthi published elsewhere in this issue of the JCDA.

Sanguinarine and Plax

Sanguinarine is an alkaloid extract from the bloodroot plant *Sanguinaria Canadensis*. It is available in several over-the-counter products: **Viadent**, both as a mouthrinse and toothpaste, had shown in some earlier studies to be effective in the reduction of plaque and gingivitis.⁷ **Plax** is a mouthrinse intended to be used before brushing. It is purported to remove more plaque than just brushing.⁸ Both of these extensively advertised products require additional long-term clinical investigation.^{9,10}

Listerine

Listerine has been used for more than 100 years and recently received the ADA seal of acceptance as an aid in controlling supragingival plaque and gingivitis. It is a combination of phenol-related essential oils — eucalyptol and thymol mixed with menthol, methylsalicylate and alcohol. In a recent study subjects rinsed twice daily with **Listerine** or a control solution and maintained usual oral hygiene procedures. Those rinsing with **Listerine** had a 36 per cent reduction in plaque and gingivitis scores as compared to controls at the end of six months.¹¹ Other studies have shown somewhat similar results. Sometimes **Listerine** causes a temporary burning sensation that users find disagreeable although the taste becomes more agreeable with continued use. It does not cause extrinsic tooth stain, promote calculus formation, cause mucosal aberrations or alter taste perception. One concern regarding the long-term use of an antiseptic mouthrinse is the possible emergence of resistant microbial forms. A study examined the effect of daily rinsing with **Listerine** for six months on the supragingival plaque microflora. The results found that there was no emergence of resistant microbial forms or opportunistic pathogens.¹²

CDA Approval

Chlorhexidine, **Viadent**, **Plax** and **Listerine** have not yet been evaluated under the CDA guidelines to assess clinical efficacy. When any product meets CDA guidelines for chemotherapeutic control of plaque and gingivitis, the Dental Profession will be informed immediately of the recognition and all

advertisements will carry the CDA Seal of Recognition.

Subgingival Irrigation

Oral rinsing has very little effect on plaque already formed subgingivally. Oral irrigators such as **Water-pik** make it possible to deliver chemically active agents into periodontal pockets and subgingivally. A study by Ciancio et al. focused on irrigating with **Listerine** from a **Water-Pik**.¹³ The results showed a greater reduction in plaque, gingival bleeding and bacterial counts as compared to a control solution.

Post-surgical rinsing

It has been customary to place a periodontal dressing following periodontal surgery. Some clinicians however have found that surgery sites do as well or better without standard periodontal dressings. A problem arises when dressings are not used in that oral hygiene efforts during the immediate postsurgical phase may be painful and difficult. An effective antimicrobial mouthrinse would be beneficial at this time. **Listerine** has been used for this purpose and was 29 per cent more effective than saline for reducing plaque and also improved wound healing.¹⁴ Chlorhexidine has also been utilized in a similar fashion.

General indications for mouthrinses

Chemotherapeutic mouthrinses which reduce plaque and gingivitis can be useful in the daily practice of dentistry. The drawback is that they cannot be expected to significantly alter subgingival plaque. Thus, they should not be regarded as a panacea but rather an adjunct to mechanical methods of plaque control. In certain situations and with many patients good oral hygiene control is difficult and the use of a mouthrinse which meets CDA and/or ADA guidelines could be of clinical benefit.

Indications for their use include:¹⁵

1. Xerostomia. This condition can be a side effect from many medications and reduces the amount of saliva making plaque control more difficult.
2. Gingival hyperplasia. Various drugs such as phenytoin, nifedipine and cyclosporin may have this property as a side effect. The overgrowth of gingival tissue makes plaque control cumbersome.
3. Extensive splinting or fixed prostheses. Interproximal cleansing can be a problem in these cases.
4. Orthodontic appliances.

5. Implants.
6. Intra-oral fixation.
7. Immediate post periodontal surgical period.
8. Patients with poor manual dexterity or medical conditions which preclude adequate oral hygiene techniques. Δ

Dr. Robert S. Turnbull is Associate Professor, Department of Periodontics, Faculty of Dentistry, University of Toronto, and has a private practice in periodontics in Toronto. Dr. Turnbull is the Scientific Editor (English) of the Journal of the Canadian Dental Association.

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Specialty Features

The Role of Systemic Antibiotics in Periodontal Therapy

Trevor Chin Quee, BDS, DDS, MS
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Halifax, N.S.

ABSTRACT

The Specific Plaque Hypothesis (SPH) has resulted in a renewed interest in the use of systemic antibiotics in the treatment of periodontal disease. Current data indicate that most cases of periodontitis can be treated satisfactorily with scaling and root planing alone. There are some cases of periodontitis however which remain refractory to mechanical debridement or which recur shortly after treatment. The data indicate that the use of antibiotics along with scaling and root planing during the treatment of these cases of periodontitis will result in significant improvement in the periodontal health of these patients. Antibiotics may also be indicated in patients with systemic diseases which may adversely affect the periodontium.

Introduction

The use of antibiotics is now an accepted part of our armamentarium in the treatment of periodontitis. When properly employed, its use can result in significant improvement in the patient's periodontal health. Like any therapy, however, its misuse or overuse can result in, at the least, no additional benefit to the patient and at the worst, harmful effects for the patient. In order to safeguard against this, an understanding of the role that antibiotics may play in the treatment of periodontal disease is necessary.

Theoretical Basis for the Use of Antibiotics in Periodontal Therapy

Although it has been long established that bacteria are the primary cause of periodontal disease, the nature of this role is only just emerging. Periodontal therapy today is based largely on the Non-Specific Plaque Hypothesis (NSPH) which holds that periodontal diseases are non-specific microbial infections and that all plaques in all mouths have an equal

potential to cause periodontal disease.¹ Based on this hypothesis, plaque formation, which occurs continuously on tooth surfaces, would have to be prevented. Under the NSPH, the use of systemic antibiotics as a method of plaque control was never accepted. Since the focus was on prevention of plaque formation which occurs continuously everyone would have required treatment for the rest of their lives. Therapy therefore, focused on the rigid mechanical removal of plaque from the dento-gingival surfaces. Although this approach can be successful it demands a great deal of time and skill on the part of the dental professional and a degree of motivation and skill from the patient that may be difficult for most persons.² Also, the effects of therapy can be as shortlived as 2-3 months³ thus necessitating early retreatment. This recurrence is no doubt due to re-infection of the subgingival area either by residual bacteria as a result of incomplete debridement or by downgrowth of bacteria from the supragingival area as a result of poor oral hygiene.^{4,5} Furthermore, periodontopathic bacteria have the ability to invade the underlying connective tissue.⁶ In this location simple debridement may not be successful since the root surface may be repopulated from the reservoir of bacteria in the tissue.

The premises of the NSPH have been brought into question¹ since it is now obvious that plaque composition varies within the same mouth and from person to person and that not all plaques have the same potential for disease. Different forms of periodontal disease are now recognized and these may be associated with specific types of bacteria. Whereas plaque associated with a healthy periodontium is sparse and consists predominantly of Gram-positive rods and cocci, that associated with periodontal disease consists predominantly of obligate anaerobes and Gram-negative rods. Dzink et al. (1988)⁷ concluded that the likelihood of a site undergoing periodontal destruction was increased if *B. forsythus*, *B. gingivalis*, *P. micros*, *A. actinomycetemcomitans*, *W. recta* or *B. intermedius* were present. The converse was true if *Sanguis II*, the *Actinomyces* sp., or *C. ochracea* was

detected. These findings have led to the Specific Plaque Hypothesis (SPH).¹

The SPH, as well as the difficulties associated with mechanical plaque control, has resulted in renewed interest in the use of systemic antibiotics in the treatment of periodontal disease. Plaque control under the SPH aims at controlling the quality of plaque by eliminating putative pathogenic bacteria. Only those patients with disease would have to be treated and the antimicrobial agent would be used for short periods of time. Although scaling and root planing can reduce the pathogenic bacteria to a level sufficient to return the periodontium to clinical health it is unreasonable to expect that it will totally eliminate all of the pathogenic bacteria.^{4,5} Furthermore, as previously indicated, pathogenic organisms may invade the underlying connective tissue thus making them inaccessible to removal by mechanical debridement. The additional use of intense short-term antimicrobial therapy with scaling and root planing may more effectively eliminate the periodontopathic bacteria thus optimizing healing and possibly prolonging the intervals between recalls. When the antimicrobial therapy stops, a non-diseased or normal flora should ideally re-establish itself in the subgingival ecosystem.

In evaluating the efficacy of adjunctive antibiotic therapy, it is necessary to determine whether or not it results in any additional improvement of the periodontium and whether or not these benefits are maintained over a longer period of time.

Use of Systemic Antibiotics in Periodontal Therapy

Antimicrobial agents selected for periodontal therapy should, ideally, fulfil the following criteria:

- (1) Effectiveness against putative periodontopathic micro-organisms.
- (2) Capable of getting to the site of the subgingival flora, e.g. by secretion in the crevicular fluid in sufficiently high concentrations.
- (3) Given the therapeutic regimen used, the antibiotic should not produce resistant strains and there should be no harmful side effects.

- (4) It should preferably not be a drug that is important in life-threatening situations.

Although very few if any antibiotics fulfil all of these criteria, several have been used in periodontal therapy viz., tetracycline, metronidazole, spiramycin and clindamycin.

Tetracycline

Tetracyclines are broad spectrum, primarily bacteriostatic and thought to exert their antimicrobial effect by the inhibition of protein synthesis. This group also includes a number of semisynthetic tetracyclines e.g., minocycline and doxycycline. Tetracyclines are effective against most of the putative periodontopathic bacteria tested.⁸ When given systemically, they are secreted in the gingival crevicular fluid.⁹ In addition to their antimicrobial action, tetracyclines (specifically minocycline) may inhibit tissue collagenase and therefore retard the breakdown of collagen as seen in periodontal disease.¹⁰

Most studies^{11,12} on the use of scaling and root planing with or without adjunctive tetracycline in the treatment of chronic adult periodontitis (CAP) have shown little additional clinical or microbiological benefits from tetracycline use. In fact there was a tendency for the microbial flora to rebound more quickly to baseline levels in patients treated with tetracycline. On the other hand, cases of CAP which are refractory to mechanical debridement alone seem to show significant improvement with the additional use of tetracycline. Slots and co-workers (1979)¹³ found that when scaling and root planing produced a clinical and microbiological improvement, tetracycline appeared to provide no additional benefits. However, patients who did not respond clinically or microbiologically to scaling and root planing alone, exhibited dramatic changes in both parameters when given systemic tetracycline for two weeks. Other reports have tended to confirm these findings.^{14,15}

Actinobacillus actinomycetemcomitans (A.a.) has been strongly implicated in the etiology of localized juvenile periodontitis (LJP)¹⁶ and therapy aimed at eliminating this bacterium seems effective in returning these patients to health. Although various reports^{17,18} indicate the LJP can be successfully treated by mechanical debridement alone, refractory cases do occur and these are usually associated with the recurrence of the micro-organism in high numbers. Slots and Rosling (1983)¹⁹ found that in some LJP cases, scaling and root planing alone

was insufficient in eradicating A.a.. Systemic tetracycline (1 gm/day) for two weeks was successful in suppressing A.a. counts although the organisms reappeared in nine of 20 deep pockets within three months. Based on the pattern of recurrence these researchers felt that antibiotic therapy for three weeks would have prevented re-infection.

Metronidazole

Metronidazole was first used in dentistry for the treatment of ANUG and its effectiveness in this area is well documented.²⁰ It has also been used effectively to treat other oro-facial infections such as pericoronitis, endodontic abscesses and acute fluctuant swellings. It is a bactericidal antibiotic with specific activity against obligate anaerobes including many periodontopathic organisms.^{8,21} The mode of action is unknown but thought to concern intracellular reduction of the molecule. It is secreted in sufficient concentration in GCF to inhibit many of the putative periodontal pathogens.²²

Studies on the efficacy of metronidazole in periodontal therapy have resulted in conflicting results. Several workers^{23,24} have found that the adjunctive use of metronidazole with scaling and root planing did not provide any additional benefits over scaling and root planing alone. On the other hand, others^{25,26} have found that the use of metronidazole improved the clinical parameters and that these improvements were sustained for at least six months. The greatest clinical improvements were in areas of severe destruction and were associated with a significant reduction of certain anaerobic-suspected pathogens such as *B. gingivalis* and large spirochetes. The conflicting results of these studies may reflect differences in severity of disease or problems with diagnosing disease activity.

Metronidazole has also been used successfully in the treatment of refractory CAP. Both Gusberti et al. (1988)²⁷ and Lundstrom et al. (1984)¹⁵ found the adjunctive use of metronidazole in the treatment of recurrent periodontitis resulted in significant clinical and microbiological improvement at re-infected sites. Lundstrom et al. (1984) compared tetracycline and metronidazole and found that they gave similar results. Metronidazole is not usually recommended for use in the treatment of LJP since neither A.a. nor *Capnocytophaga* species are fully sensitive to the drug.⁸

Spiramycin

Spiramycin is a macrolide antibiotic belonging to the same group as erythro-

mycin. Spiramycin is not widely prescribed by the medical profession since it does not attain very high serum levels. It is, however, present in very high concentration in alveolar bone, gingival tissue, and salivary glands for periods up to three weeks and is gradually secreted from these sites into saliva and gingival crevicular fluid.²⁸ The recent finding that spiramycin will penetrate and concentrate within the cells of polymorphonuclear leucocytes or in alveolar macrophages may have considerable therapeutic implications.²⁹ Although spiramycin is generally regarded as having a Gram-positive spectrum, it is effective against many putative periodontopathogens.^{21,30} Although it is bacteriostatic at serum concentrations, it may be bactericidal at tissue concentrations.

The use of spiramycin was first reported in 1956.³¹ Since then there have been numerous case reports indicating the efficacy of spiramycin in periodontal therapy.²⁸ Chin Quee et al. (1988)³² compared the adjunctive use of both spiramycin and tetracycline in the treatment of advanced periodontitis and found that although scaling and root planing alone was sufficient to return the periodontium to a state of health, the additional use of spiramycin resulted in significant reduction in spirochete level which was sustained for at least 24 weeks. In contrast, the additional use of tetracycline did not result in any additional microbiological improvement at 24 weeks. Bain et al. (1989)³³ in a multicentre study comparing the adjunctive use of spiramycin with scaling and root planing alone, found that the additional use of spiramycin resulted in a significantly greater reduction in probing depth which lasted for at least 24 weeks. Spiramycin has also been shown to have a synergistic action with metronidazole.³⁴ Chin Quee et al. (1987)³⁵ studied the use of scaling and root planing with or without an antibiotic preparation containing spiramycin & metronidazole and found a significant gain in attachment level in the antibiotic group along with a greater and longer lasting reduction in spirochete level than the control group.

Although *in vitro* studies indicate that A.a. is resistant to spiramycin³⁰ it has been used successfully in the treatment of LJP.³⁶ This may be a reflection of the very high tissue concentrations achieved by spiramycin.

Clindamycin

Clindamycin is a bactericidal antibiotic widely used in medicine for the treatment of anaerobic infections, especially those

caused by the genus *Bacteroides*. It is secreted in the gingival fluid at levels comparable to blood levels and *In vitro* studies indicate that greater than 95 per cent of subgingival microorganisms are inhibited including some bacteria not affected by tetracyclines.³⁷

Clindamycin has been found useful in situations where adjunctive tetracycline was not effective. Thus Gordon et al. (1985)³⁸ found that when clindamycin was used as an adjunct to scaling and root planing in the treatment of patients who had previously been unsuccessfully treated with scaling, periodontal surgery and the use of tetracycline, the incidence of gingival sites demonstrating active disease decreased from an annual rate of 10.7 to 0.5 per cent. Significant clinical improvements were maintained for at least 12 months. Clindamycin is not usually recommended in the treatment of LJP since *Actinobacillus actinomycetem-comintans* is not susceptible to it.³⁷

Guidelines for the Use of Antibiotics

As a general principle, the indiscriminate use of any antibiotic, especially one that is important for treatment of life-threatening diseases, should be avoided. Problems may arise with the use of any antibiotic and these include the development of resistant bacteria as well as toxic or allergic reactions. The development of resistant bacteria can be minimized by limiting the use of antibiotics. In situations where the use of antibiotics are indicated, the antibiotic should be prescribed in the appropriate dose for a sufficient period of time. Unfortunately the selection of the appropriate drug regimen is often very empirical and based more on the clinical experience of others rather than on the basis of bioavailability studies. Although most of these antibiotics are usually well tolerated, the use of any medication does carry certain risks of side effects or toxicity. Practitioners should therefore familiarize themselves with any medication prior to prescribing it. The most common side effects are usually associated with gastro-intestinal irritation and include G.I. discomfort, nausea, vomiting and diarrhea. With the exception of clindamycin these side effects are infrequent and seldom serious. Clindamycin has the potential for causing serious GI disorders, including pseudomembranous colitis. Its use must therefore be carefully weighed against its therapeutic value. If therapy is initiated with this antibiotic careful monitoring for colitis is essential. The use of tetracycline is contra-indicated during tooth development because of the

danger of permanent tooth discoloration and enamel hypoplasia. Metronidazole should not be prescribed to patients with active neurological disorders or a history of blood dyscrasia, hypothyroidism and hypoadrenalism. It should be avoided in alcoholics and patients should be warned not to consume alcohol while taking the antibiotic because of a possible disulfiram-like reaction. The use of these antibiotics should be avoided in pregnant or lactating women. An in depth discussion of possible toxic effects, drug interactions etc. is beyond the scope of this article and the reader is referred to the Compendium of Pharmaceuticals and Specialties.

Antibiotic therapy is not usually indicated in the treatment of chronic gingivitis and most cases of CAP since the data indicate that scaling and root planing with or without antibiotic therapy is effective in treating these conditions. Very few studies indicate that antibiotics alone is superior to scaling and root planing alone or with antibiotics. Although some studies indicate that advanced CAP and LJP may benefit from adjunctive antibiotic therapy the recommendation would be to treat these patients conventionally first. If patients prove to be refractory to mechanical debridement alone or if disease recurs within a short interval then the use of adjunctive antibiotics is indicated. Although there is little data regarding the use of adjunctive antibiotic therapy in the treatment of patients with systemic diseases which may adversely affect the periodontium e.g., Down's syndrome, neutrophil dyscrasias, diabetes mellitus, endocrine disorders, nutritional deficiencies, the adjunctive use of antibiotics may be indicated in these patients. Ideally all cases should be closely monitored both clinically and microbiologically before and after treatment. When patients prove refractory to a course of a particular antibiotic, culturing and antibiotic sensitivity may be indicated to determine the appropriate antibiotic. There is no one antibiotic that will be suitable in all cases. Δ

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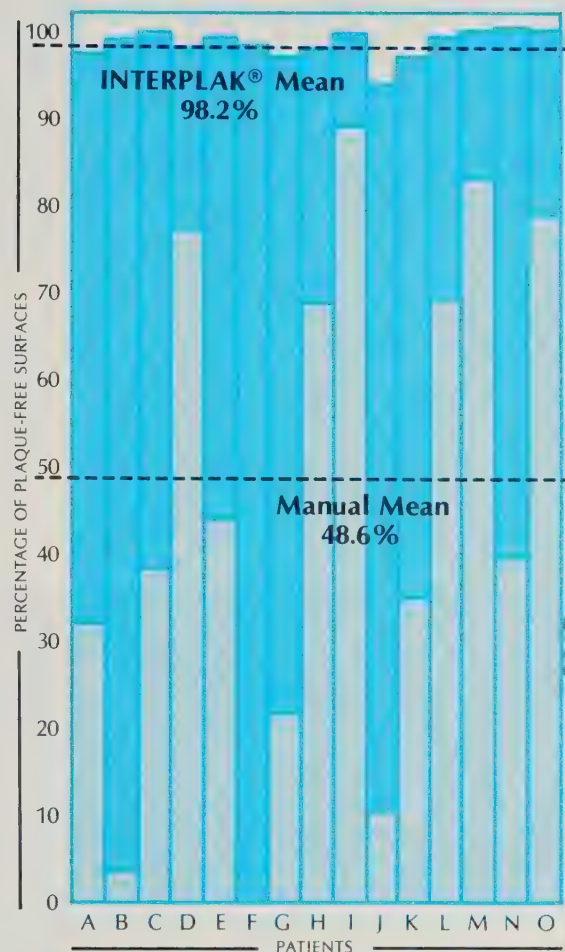
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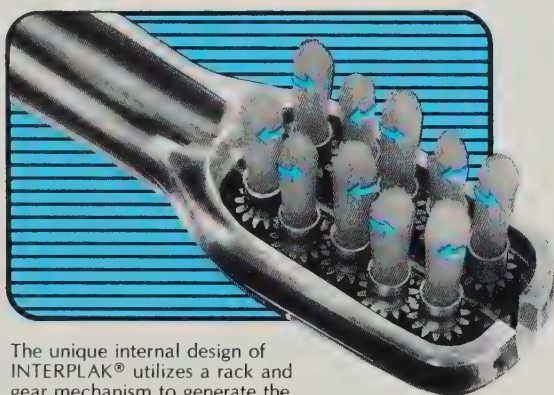
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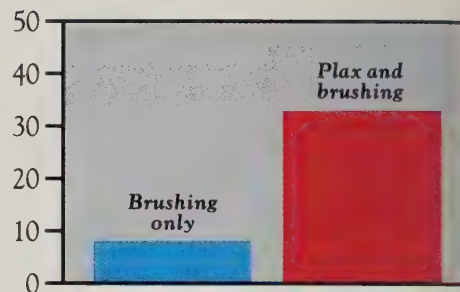
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Periodontal Surgery: what's new?

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ABSTRACT

An overview of newer periodontal surgical techniques is provided. Procedures which are being used to replace or regenerate periodontal attachment tissues or to restore the normal surface appearance of the periodontium are briefly described.

Periodontal Surgery: what's new?

Central to current approaches to periodontal therapy is the control of dental plaque and the microorganisms in periodontal pockets that are considered to influence loss of periodontal attachment. Control of supragingival plaque accumulation remains dependent on mechanical means — a toothbrush, floss and other oral hygiene aids. These tools for plaque removal are easiest to use and function most effectively when gingival tissues exhibit their normal form and characteristics. Periodontal flap surgery is used to gain access to periodontally involved root surfaces. The primary aim of this procedure is to treat the root surface in order to promote healing of the adjacent periodontal tissues and to achieve a gingival form that allows easy maintenance of periodontal health. If this is followed by regular maintenance therapy directed to prevent re-establishment of a pathogenic microflora, then periodontal attachment loss can be arrested for the vast majority of periodontitis-susceptible patients.^{1,2}

Recently developed techniques have attempted not only to stabilize the periodontal attachment but to focus on ways to actually replace or regenerate the lost tissues. These techniques are based on an increased understanding of periodontal wound healing and may hopefully usher in a new era in periodontal therapy.

Periodontal surgery can also contribute to "cosmetic dentistry". Various mucogingival or plastic surgery procedures have been developed which restore the normal surface appearance of the periodontium and its relationship to the

crown of the tooth.

This article will provide a brief overview of some newer surgical techniques that are gaining clinical acceptance in the treatment of periodontal problems.

I. Periodontal surgery for replacement or regeneration of the periodontal attachment tissues

The tissues which constitute the periodontal attachment are the alveolar bone, the periodontal ligament and the cementum of the root. These tissues function as a system which not only supports the teeth and links them to the jaws but also provides proprioceptive and tactile sensation, which play an important role in the neuromuscular mechanisms controlling the masticatory musculature. As these tissues are lost through periodontal diseases, the ability of the teeth to carry out their main function of mastication may be diminished. The ultimate concern being, of course, actual tooth loss.

A. Osseous Grafts

Attempts to replace the supporting bone destroyed by periodontal disease have taken many forms. Most recently three main types of procedures have been used: (1) autogenous osseous grafts, (2) synthetic osseous grafts and (3) allogeneic osseous grafts.

Autogenous osseous grafts

Taking viable bone material consisting of the mineralized bone matrix and bone cells from one site and transplanting it to periodontal osseous defects within the same individual has been successful to various degrees. The most commonly used site for graft material of this nature is cancellous bone from the tuberosity region. Grafts of this type heal primarily by what is termed **osteoconduction**.³ In healing by osteoconduction, the transplanted bone acts as a scaffold for the ingrowth of the vasculature and osteoblastic tissue from adjacent osseous tissue as it replaces the grafted bone.

Autogenous osseous grafting has been shown to be clinically successful.⁴ However, many of the studies assessing

osseous grafting have been difficult to undertake in a controlled manner. Important confounding variables such as the extent of plaque control, defect shape and the healing ability in the absence of any graft at all have often not been well determined. As a result, the clinical predictability and the extent to which regeneration of new periodontal ligament, cementum and bone occur, are not totally clear.

Synthetic implants

The often limited availability of intraoral sites for sufficient osseous grafting material has prompted the use of synthetic grafting materials. These materials are calcium phosphate ceramics which differ in their varying capacities for resorption.

The nonresorbable hydroxyapatite materials (eg. Periograf, Calcite) act primarily as "fillers". They are dense, biologically inert materials that can be placed in osseous defects. The potentially bioresorbable tricalcium phosphate materials (eg. Synthograft) are in part resorbed when placed in periodontal defects. They do not, however, appear to induce new bone formation.⁵ For both types of materials the individual particles become surrounded by connective tissue but there is no evidence that either new bone growth in continuity with remaining bone, or new attachment is stimulated by them. Some degree of clinical benefit found with these materials may result from the support they impart to the overlying flap during initial healing and the benefit this may have in allowing more effective postoperative plaque control.

Demineralized freeze dried bone allografts (DFDBA)

The matrix of bone (and cementum) contains diffusible glycoproteins that, under the right conditions, can recruit new bone-forming cells by a process termed **osteoinduction**.³ Cadaver bone, suitably prepared, provides a demineralized matrix that is nonantigenic and has osteoinductive properties. Clinical studies using DFDBA placed into periodontal defects have demonstrated new bone formation and increased levels of clinical attachment.⁶

This is a very promising approach for the treatment of periodontal osseous defects because of the "off the shelf" availability of such materials and their potential to induce new bone formation. It still remains, however, to more fully define the basic mechanisms involved in osteoinduction and the conditions of preparation of DFDBA to maximize its osteoinductive potential and its clinical predictability.

An apparent uncertainty with all of the osseous grafting procedures is the extent to which a connective tissue attachment to the root surface occurs. While histological evidence of bone connected through collagen fibres inserted into new cementum has been demonstrated adjacent to bone material grafted sites, it is also apparently not uncommon to find only a thin long epithelial attachment interposed between the bone and cementum.⁷ The long-term significance of this result is uncertain but it is assumed that a connective tissue attachment is more beneficial.

B. Guided Tissue Regeneration

Healing after periodontal flap surgery results in what is termed a long epithelial attachment.⁸ After the flap is replaced the epithelial cells from the superficial edge of the flap grow quickly down its inner aspect. This occurs faster than mesenchymal cells, either from the gingival connective tissue or the periodontal ligament, can populate the interface between the flap and root surface. This epithelial downgrowth seems to be a protective mechanism.⁹ If bone derived cells alone are allowed to populate this type of healing wound, then ankylosis results, and if cells arise solely from gingival connective tissue, then external resorption occurs. However, the epithelial downgrowth does preclude the formation of new cementum and the possibility of a new or regenerated connective tissue attachment to the root surface.

Recent basic research about periodontal healing has clarified that predictable regeneration of connective tissue attachment depends on progenitor cells growing from the periodontal ligament tissue.⁹ These cells can give rise to new cemen-

tum into which is attached connective tissue fibres. The dynamics of the healing periodontal flap wound require that the faster growing cells from the epithelium or the gingival connective tissue be excluded if this periodontal ligament cell dependent regeneration is to occur. These findings have found clinical application in a technique whereby an inert barrier material (Goretex®) is placed between the replaced flap and the root surface in order to exclude all cells from the healing wound except those arising from the periodontal ligament (and possibly the bone)¹⁰ (Figure 1). After sufficient time (8 to 10 weeks) for the new attachment to be formed, the barrier is removed by a minor surgical procedure. This technique is termed **guided tissue regeneration (GTR)** and may result in a nonprobeable attachment. This is of particular value and is most easily accomplished for the treatment of facial or lingual Class II furcation involvements.

Current research on GTR is investigating the use of slowly resorbable barrier materials and the use of chemicals which

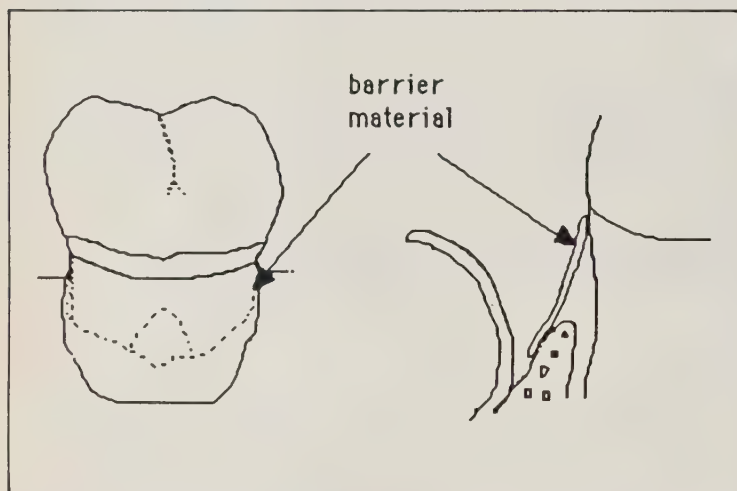


Figure 1. Barrier placed over the bone margin and the root surface in order to exclude all cells from the healing wound except those arising from the periodontal ligament.



Figure 2. Laterally positioned flap: (a) before surgery



(b) during surgery



(c) after surgery (Courtesy Dr. C.G. Ibbott).

will promote the growth of periodontal ligament cells into the wound while deterring other cells from growing into this site. As well, longer term field studies have yet to be reported for this technique.

II. Cosmetic periodontics

As greater sophistication has been achieved in the esthetic aspects of restorative dentistry, the part that periodontics can play in enhancing the cosmetic result has also progressed.^{11,12} The ability to reshape the surface tissues of the periodontium or to augment the gingiva and cover root surfaces denuded by recession has allowed periodontics to contribute to the esthetic appearance and comfort of patients. As well, gingival tissues with more normal topography and form permit easier and more effective plaque control.

A. Gingival augmentation and root coverage

It has become apparent that the amount of gingiva at a facial or lingual site of a tooth is not as critical in determining whether recession will occur at that site

as is the persistence of gingival inflammation resulting from plaque accumulation or frictional abrasion by faulty tooth-brushing. Sites of minimal or even a lack of gingiva, if kept inflammation free, can apparently exhibit long-term stability.¹³ Decisions about the need to augment gingiva are thus based mainly on two factors: (1) actual progressive recession, which indicates etiological factors are not being controlled well enough even though efforts in this regard are being made, and (2) the presence of conditions which are known to result in increased opportunities for more persistent inflammation, such as the placement of subgingival margins of restorations.

Augmentation of gingiva to extend its width apical to the gingival margin is accomplished by an **autogenous gingival graft** (or "free gingival graft") in which, typically, masticatory mucosa from the hard palate is grafted to a prepared recipient bed at the site where more gingiva is required.

When concern about recession relates to esthetics or root sensitivity, then augmentation of the gingiva must also

include actual coverage and clinical attachment to the root by gingiva. Procedures designed to accomplish this are: the laterally positioned flap, the coronally positioned flap or a thick autogenous gingival graft.

The **laterally positioned flap** is suitable for recession at a single site where there is adequate adjacent gingiva. In this procedure, gingival tissue is laterally positioned from a site contiguous to the recession area so that not only is gingiva provided but root coverage is accomplished as well (**Figure 2**). Most studies indicate that at least 70 to 80 per cent coverage of the denuded root can be expected while some slight recession at the donor site may occur.

The **coronally positioned flap** can be used at single or multiple sites and results in a highly esthetic result when there is adequate gingiva at the recession sites that can be coronally positioned. If there is inadequate gingiva, then an autogenous gingival graft to augment the gingiva can be placed some time prior to coronally positioning the flap for root coverage (**Figure 3**).



Figure 3. Coronally positioned flap: (a) before surgery



(b) after free gingival graft to augment gingiva



(c) after coronally positioned flap.



Figure 4. Thick autogenous gingival graft: (a) before surgery

A thick autogenous gingival graft can be used to both augment gingiva and provide root coverage (Figure 4). This procedure seems quite technique-sensitive but has the versatility of accomplishing vestibular deepening and eliminating frenum pulls at the same time as providing root coverage in a one stage operation. Good results have been demonstrated with this technique but several variables in the procedure, mainly relating to preparation of the root surface,¹³ remain to be fully clarified.

B. Ridge augmentation

Localized alveolar ridge deficiencies due to trauma or advanced periodontal disease, especially in maxillary anterior sites for patients with a high lip line, can pose esthetic problems that are difficult to overcome solely by restorative means. Several techniques to rebuild or augment a deficient ridge before a prosthesis is fabricated have been described.¹² These mainly involve bulk soft tissue addition to the surface, or subsurface implantation of connective tissue or nonresorbable hydroxyapatite particles.

Full thickness onlay grafts

Grafts placed on a prepared bed can be used to increase the buccolingual dimension of the ridge but are particularly useful to augment deficient ridge height. In this technique, full thickness tissue, usually from the posterior palate, is sutured to a recipient site denuded of surface epithelium (Figure 5). The procedure can be repeated at two or three monthly intervals to achieve sufficient height. Secondary gingivoplasty procedures may be necessary to prepare a pontic site to give the illusion of an interdental papilla.

Subsurface grafts and implants

Grafts or implants inserted into a prepared subsurface pouch are useful to increase the buccolingual dimension of a ridge while retaining the existing surface appearance of the tissue. Either a connective tissue graft from the posterior palate or the tuberosity area or nonresorbable hydroxyapatite particles can be placed into the pouch to regain ridge form. The latter are most useful for larger defects.

C. Crown lengthening procedures

Crown lengthening procedures have been advocated to assure that restoration margins can be placed supra- or equigingival in an effort to better achieve long-term periodontal stability. Typically this entails an apically positioned flap procedure together with osseous resection in



Figure 4. Thick autogenous gingival graft: (b) during surgery



(c) after surgery (Courtesy Dr. C.G. Ibbott).



Figure 5. Full thickness onlay gingival graft used to augment deficient ridge height prior to fixed prosthesis (Courtesy Dr. C.G. Ibbott).

order to achieve the so-called "biological width".¹⁴ In anterior regions when, for example, a fracture or perforation involves a facial or proximal aspect of a tooth, this resective approach may compromise the esthetic appearance of this region. An alternative treatment approach which takes this into account is **orthodontic forced eruption with fibrotomy**.¹⁵ In this technique, orthodontic forces are applied to extrude the tooth

while at the same time supracrestal gingival fibres are regularly cut by an incision into the gingival sulcus. The fibrotomy performed on a weekly basis allows the tooth to extrude without bringing the crest of bone coronally with it. This precludes the necessity of subsequent osseous resection and leaves adjacent teeth uninvolved.

In summary, an overview of some newer periodontal surgical techniques

has been described. Innovative procedures devised by talented and dedicated clinicians and researchers have extended the possibilities for beneficial periodontal treatments. △

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An allergic reaction following injection of local anesthetic: A case report

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ABSTRACT

The practice of dentistry necessitates the administration of numerous drugs by the oral route or by injection. This paper presents a case report in which a patient experienced an acute allergic reaction following mandibular block with articaine hydrochloride for dental extraction. It also reviews the pathophysiology of allergy and the office protocol required to successfully manage such a potentially life-threatening reaction.

Key Words: allergy, local anaesthetic, bisulfite, methylparaben, Articaine

SOMMAIRE

L'exercice de la médecine dentaire exige l'administration de nombreuses drogues par voie buccale ou par injection. Dans cet article, on présente un rapport sur un cas dans lequel le patient a eu une réaction allergique aiguë à la suite d'un blocage mandibulaire avec du chlorhydrate d'Articaine pour extraction dentaire. On revoit également la patho-physiologie de l'allergie ainsi que le protocole du cabinet pour gérer avec succès pareille réaction qui peut mettre la vie en danger.

Introduction

The concept of drug allergy has recently been described in great detail by Pallasch.¹ Briefly, hypersensitivity reactions are the result of sensitization to a drug, either by previous exposure to the same drug or to a chemically related drug.

Thus, drug allergy commonly requires a sensitizing dose, during which time anti-

bodies are formed against the drug with no allergic symptoms manifested until re-administration of the drug. For most drugs to become antigenic, they must combine with larger molecules (usually proteins) to form the complete antigen or be converted to reactive metabolites. This is the hapten theory of drug allergy.² Genetic control may also play a role in drug allergy.^{1,2} Four types of allergic reactions have been described.¹⁻⁴ Type I (immediate type) is IgE-mediated and is the most severe (anaphylaxis). Type II (cytotoxic type) involves primarily IgG or IgM antibodies and complement activation and tends to involve blood-cell reac-

tions such as hemolysis, agranulocytosis and vasculitis. Type III reactions (immune complex, serum sickness) appear to be IgG or IgM mediated and involve damage to target tissues (glomerulonephritis, etc.). Type IV reactions (delayed sensitivity, cell-mediated) appear to be primarily due to allergically sensitized lymphocytes and may involve allergic reactions to local anesthetics.^{1,2}

Several factors, including age, genetics, frequency and duration of drug administration, route of administration, chemical nature of the hapten and variable antibody levels, may alter the predictability of allergic drug reactions.

TABLE I

Typical signs of allergic reactions

CENTRAL NERVOUS SYSTEM	— feeling "strange" — loss of consciousness — convulsions
CARDIOVASCULAR SYSTEM	— weak, fast pulse ✓ — hypotension ✓ — dysrhythmias — cardiac arrest ✓
SKIN and MUCOUS MEMBRANES	— cyanosis — flushing — pruritis (itching) ✓ — urticaria (hives) ✓ — angioedema ✓ — rhinitis — conjunctivitis ✓
GASTROINTESTINAL SYSTEM	— crampy, abdominal pain — nausea — vomiting ✓ — diarrhea ✓
RESPIRATORY SYSTEM	— glottic edema — hoarse voice ✓ — difficulty swallowing — wheezing from bronchospasm ✓ — sneezing ✓ — cough

Pathophysiology

Numerous mediators are released following antigen-antibody interaction. These include histamine, kinins, prostaglandins, leukotrienes, chemotactic factors, serotonin, complement activation factors, lymphokines and others.³ These result in an increase in capillary permeability, vasodilatation, bronchoconstriction as well as direct cardiac and gastrointestinal effects. Some manifestations of allergy are outlined in **Table I**. It should be noted that allergy manifests as an entire spectrum of events from mild to severe (anaphylaxis), so that not all symptoms may be evident. As well, onset may be immediate (anaphylaxis) or delayed.

At present there is no clear proof that IgE-mediated allergic reactions are involved with amide local anesthetics. Delayed allergic reactions (Type IV) to local anesthetics are however well documented.^{1,2}

The following characteristics have been proposed as consistent with the probable diagnosis of drug allergy.^{1,3}

1. The reaction observed does not resemble a known pharmacologic property of the drug.
2. After initial exposure there is a latent period while sensitization occurs. Re-exposure to the drug will usually elicit an immediate reaction.
3. The clinical reaction usually bears no relationship to the drug dosage.
4. A similar reaction can be produced by a chemically-related drug.
5. Adverse reactions occur in a small percentage of the population at risk.
6. The clinical picture is similar to that seen in typical allergic syndromes (**Table I**).

Case Report

J.C., a healthy, 33-year-old female presented to her general practitioner for an initial examination, complaining of pain in the right mandibular posterior region. Her medical history included hepatitis as a child, allergies to ester local anesthetics, sulfa drugs and bee venom. As a child she was diagnosed as being hypothyroid and after two years of levothyroxine treatment, medication was withdrawn as she became euthyroid.

After a complete oral and radiographic examination, a decision was reached to extract tooth 47. She was sent for blood tests to establish her hepatitis status and results confirmed she was HbsAg negative.

At the following appointment, an initial two cartridges (3.4 ml) of 4 per cent arti-

caine 1:100,000 epinephrine was delivered by right mandibular block and buccal infiltration. During the second block, a positive aspiration was noted, hence the needle was repositioned and the block completed. Only grade B anesthesia was achieved and therefore an additional 1.7 ml 4 per cent articaine 1:200,000 epinephrine was administered (by right mandibular block).

Minutes later the patient was complaining of feeling weak and "distant", although pulse and respiration remained within normal limits. After 10 minutes the patient felt comfortable.

A full-thickness flap was raised and buccal bone was removed. At this point (approximately 20 minutes after initial injection), a swelling from the patient's right infraorbital region extending down the right neck was apparent. Within five minutes the patient's right eye was swollen completely shut. Swelling extended to involve both lips and back as far as the ear. Only slight unilateral swelling of the tongue was noted. The airway remained unobstructed and swallowing was not impaired. Emergency drugs were secured but not delivered at this time. Within 15 minutes the swelling decreased slightly and the surgery was completed.

The patient was observed and monitored (blood pressure and pulse as to rate, rhythm and volume) for one hour prior to release and placed on oral Benadryl at a dose of 25 mg four times a day for five days.

The patient was contacted the following day. She explained that facial swelling was still evident as well as shoulder and abdominal soreness. A postoperative appointment five days later revealed all facial tissues were back to normal and there was no evidence of any shoulder or abdominal pain.

The patient was referred to her physician for examination. The procedure and complications were discussed with the physician and it was then agreed to refer her to an allergist whose expertise included allergy-type reactions to local and general anesthetics. It should be noted that topical local anesthetic was not used. As well, this patient had never previously been treated with articaine. An ADR (adverse drug report) was filled out and filed with Health and Welfare, in Ottawa.

Discussion

Local anesthetics have proven to be amongst the safest of all drugs in current use. True immunologic reactions, even by the patient labelled "allergy-positive",

account for less than 1 per cent of all adverse reactions.^{1,5} The remainder are idiosyncratic reactions, psychic reactions, traumatic or toxic reactions to the local anesthetic or the vasoconstrictor. Patients may, however, exhibit true allergy to some of the constituents of the local anesthetic solution, particularly the methylparaben antibacterial preservative and the vasoconstrictor anti-oxidant — sodium bisulfite.¹ True allergy to the ester local anesthetics, which have for the most part been replaced by the amides, was however relatively common.

One of the breakdown products of the ester local anesthetics is the highly antigenic agent p-aminobenzoic acid. The breakdown products of the amide local anesthetics do not include a basic amine in the para position and this probably accounts for the rarity of sensitization reactions.^{1,2} Consequently, cross-hypersensitivity among amide anesthetics or between amide and ester anesthetics is not seen. A breakdown product of methylparaben is also p-aminobenzoic acid, hence a patient with allergy to ester local anesthetics may also demonstrate an allergic reaction to amide local anesthetics containing this agent. Fortunately, most single-dose local anesthetic cartridges used for dentistry no longer contain methylparaben.

Sensitivity to methylparaben may be via past exposure to ester local anesthetics or to methylparaben-containing local anesthetics or other commonly used compounds which contain it.² There is also the potential for cross-sensitivity to methylparaben, ester local anesthetics and sulfa drugs (to which this patient is sensitive) due to structural similarities.⁸

Sulfites are found in many foods, medications and beverages.^{1,6} The typical sulfite-sensitive individual is frequently an asthmatic adult, often with allergy to aspirin and other food additives. The mechanism by which sulfites provoke allergy is currently speculative. This important subject has recently been extensively reviewed by Blackmore.⁶

Prior to dental treatment, a thorough medical history is essential, and a complete history of the previous "allergic" situation must also be taken. This should include the name of the drug used and who administered it, concurrent medications that the patient is taking, position of the patient in the dental chair, other allergies (such as food) and complete details of the "allergic" reaction. In this way, many "allergic" reactions can be dismissed. Both the patient's and operator's fear can be alleviated if allergy testing is performed under controlled conditions.

The atopic individual is one who seems to have multiple allergies to many common substances.² There appears to be a definite familial predisposition for an increased susceptibility to sensitization. This patient must be approached with caution by the dentist prior to treatment. The patient described in this case report appears to fit into this category.

Methods of allergy testing have been described elsewhere.^{4,7} False-positive and false-negative results can occur however, and therefore one must always be prepared for adverse reactions.

Declining antibody levels with time may explain the poor correlation with allergy testing and patient allergic history. Thus, tests are most valid immediately after the allergic experience. There are, however, no apparent true allergies to anesthetics after a negative challenge test.^{1,2} Also, many drugs have molecular weights too low to even elicit positive reactions during allergy testing in patients known to have allergies.² Despite this, where symptoms following injection suggest an allergy and in which testing is not conclusive, the dentist must proceed with caution. The allergist may advise pre-treatment with steroids, antihistamines and/or cromolyn sodium (sodium cromoglycolate).^{1,7,8}

This patient was referred to an allergist with much experience in diagnosing cases with allergy-type symptoms following both local and general anesthetic drug administration. Testing showed a negative result to bisulfite and a strongly positive result to the articaine solution. It was thus recommended that the patient be treated with local anesthetic solutions, that are without methylparaben. The specific solutions recommended were lidocaine (Xylocaine) and prilocaine (Citanest). This patient tested negative to bisulfite, hence epinephrine-containing solutions could be used.

Articaine hydrochloride has become a popular local anesthetic in dental practice. Because of its high partition coefficient (lipid solubility) and linear molecular shape (thiophene nucleus), it theoretically has the properties of rapid diffusion as well as great potency.⁹ Methylparaben (1.0 mg/ml) is currently used as the antibacterial agent, even in the single-use cartridges, while sodium metabisulfite (0.5 mg/ml) is the anti-oxidant. Because of its allergy-producing potential, the methylparaben has been discontinued in most other commonly used dental local anesthetic cartridges.

The role of the dentist in any emergency must be one of *preparedness, prevention, recognition and initiation of stabilization*.

TABLE II

Some useful drugs for the treatment of allergic reactions in the dental office

OXYGEN	100% Flow Rate: 7-10 ml/min	by inhalation
FLUIDS	Ringer's Lactate 1000 ml bags + infusion set	intravenously 2-4 liters
VASOPRESSOR	Epinephrine 1:1000	subcutaneously 0.3-0.5 mg
	1:10,000	intramuscularly 0.3-0.5 mg
ANTIHISTAMINE	Diphenhydramine (Benadryl)	intravenously slowly titrated to desired effect 0.1-0.5 mg MONITOR closely!
	Hydroxyzine (Atarax)	intravenously, intramuscularly 25-50 mg
	Ranitidine (Zantac)	intramuscularly 25-50 mg orally 10-50 mg
STERIODS	Hydrocortisone (Solu-cortef)	orally 150 mg
BRONCHODILATOR		intravenously, intramuscularly 100-500 mg
	Salbutamol (Ventolin)	2 puffs via nebulizer by inhalation

This emergency was quickly recognized as many of the classic signs of allergy were clearly manifested. All treatment was stopped and close monitoring followed.

Initiation of stabilization includes proper patient positioning — elevation of the legs to encourage venous return — opening the airway, monitoring breathing, administration of 100 per cent oxygen to the spontaneously breathing patient and mouth-to-mouth ventilations to the apneic patient. Carotid pulse as to rate, rhythm and volume as well as blood pressure are also monitored. If no pulse is palpable, rapid initiation of CPR is necessary. Activation of the Emergency Medical Services (EMS) — call 911 — should also be instituted. Only if the basic A, B, C manoeuvres of CPR can be taken over adequately, should the dentist attempt to secure an intravenous line.

Allergic reactions require some modifications to the basic CPR-type protocol. Because of bronchospasm and glottic edema, early drug intervention is often necessary to aid in securing the airway. Similarly, rapid intubation or cricothyrotomy may be life-saving. Epinephrine 0.3 mg, given subcutaneously or intramuscularly, produces rapid results. Its alpha properties cause generalized vasoconstriction, helping raise blood pressure and reversing capillary permeability. Its beta properties help stabilize mast cells, thus preventing further histamine release. As well, its betamimetic effect causes bronchodilation. This selective

bronchodilating effect can also be produced with Salbutamol (Ventolin) by inhaler, and this drug should be kept in the office emergency kit. If epinephrine is given intravenously, it should be diluted to a 1:10,000 solution with appropriate fluids and given under hospital emergency-room monitoring due to its dysrhythmogenic potential.

Vasopressors with pure alpha properties such as methoxamine and perhaps phenylephrine are probably contraindicated. It is thought that small airway constriction may be alpha-mediated and would then worsen bronchospasm. As well, agonists may in fact cause degranulation of mast cells and hence further mediator release.

An intravenous line set up in a large peripheral vein followed by infusion of Ringer's lactate will expand the intravascular volume, which may become depleted due to the capillary leakage. Autotransfusion caused by raising the patient's legs also helps restore central blood volume.

Antihistamines (both H₁ and H₂ antagonists), orally and intramuscularly, may be useful in mild to moderate allergic reactions. Even when given intravenously, they are not "front-line" drugs but are often useful in preventing the all-too-frequent recurrence of symptoms following control of the acute situation. Also, steroids, usually given intravenously, are particularly useful in prevention of recurrent episodes as they tend to stabilize mast cells. In the acute situation, they may be of some use in that they may

make the vasculature more responsive to injected catecholamines (epinephrine) and may prevent capillary leakage. Steroids also have well known anti-inflammatory and immunosuppressant properties. Like antihistamines, steroids take a finite amount of time to reach peak effect and are therefore of limited use in the acute situation. As mentioned, steroids and antihistamines may be used prophylactically in the atopic individual. **Table II** shows some of the drugs which may be useful in the management of an allergic reaction which may occur in the dental office.

Conclusion

While allergy to amide local anesthetics is extremely rare, a significant number of patients may manifest an allergic reaction to one of the other constituents in the local anesthetic dental cartridge. This paper reviews a typical case report and highlights the dentist's role in the recognition and management of such a potentially life-threatening reaction. Δ

Acknowledgement

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Articaine hydrochloride is marketed under the trade name Ultracaine® by Hoechst Canada Inc., Montreal, P.Q. H4R 1R6.

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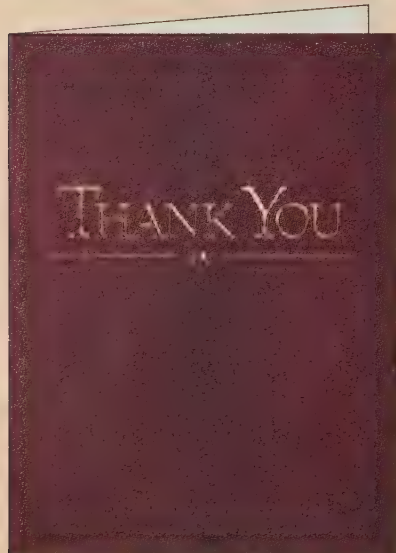
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Some clinical properties of Octocaine 200 (2 per cent Lidocaine with Epinephrine 1:200,000)

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ABSTRACT

This study utilizes healthy volunteers to determine, via electronic pulp tester, such basic clinical parameters as time of onset and duration of action for an infiltration and mandibular block utilizing the recently available local anesthetic preparation, 2 per cent lidocaine with 1:200,000 epinephrine (Octocaine 200). This study showed Octocaine 200 to be both safe and efficacious, producing times of onset and duration within the clinically useful range. The rationale for vasoconstrictor use in dentistry is also reviewed.

Key words: Vasoconstrictor, Epinephrine, Electronic Pulp Tester, Octocaine 200.

SOMMAIRE

Cette étude a eu recours à des volontaires en santé pour déterminer, à l'aide d'un appareil électronique pour examiner la vitalité pulpaire, des paramètres cliniques fondamentaux comme le temps d'attaque et la durée de l'action pour une infiltration et un blocage mandibulaire en utilisant la préparation anesthésique locale récemment apparue sur le marché: Octocaine 200 (2 pour cent de lidocaïne avec 1:200.000 d'épinéphrine). Cette étude a démontré qu'Octocaine 200 est à la fois sûr et efficace, entraînant des temps d'attaque et de durée qui se situent dans la marge cliniquement utile. On revoit également les raisons de l'usage vasoconstricteur en médecine dentaire.

Introduction

Two per cent lidocaine has been used extensively for local anesthesia since its introduction in the 1940s. It is usually employed with epinephrine as a vasoconstrictor in the ratios of 1:50,000 and 1:100,000, with the latter most commonly used. It is well known that epinephrine may cause undesirable systemic effects and, with this in mind, there has been a trend towards using much smaller concentrations of epinephrine,

particularly the 1:200,000 preparation. Sufficient research exists on the safety and efficacy of lidocaine and the various vasoconstrictor preparations; however, there is an absence of data on the clinical parameters achieved with the specific solution 2 per cent lidocaine with 1:200,000 epinephrine, (Octocaine 200-Novocol), supplied in a 1.8 ml standard dental cartridge.

Objectives

The objectives of the study were to:

1. Determine the time of onset of pulpal and soft-tissue anesthesia following a maxillary infiltration of tooth 14.
2. Determine duration of pulpal and soft-tissue anesthesia following infiltration of tooth 14.
3. Determine onset of pulpal and soft-tissue anesthesia following a left-sided inferior alveolar nerve block, to involve tooth 36.
4. Determine duration of pulpal and soft-tissue anesthesia of tooth 36 following left-sided inferior alveolar nerve block.
5. Determine that 2 per cent lidocaine with epinephrine 1:200,000 was safe, efficacious, and without major adverse side effects.

Review of the literature

Local anesthetics produce membrane stabilization or conduction blockade by a combined effect of membrane expansion (base form of the local anesthetic molecule) and internal receptor interaction (charged form of the molecule).¹ Most local anesthetics used in dentistry are combined with a vasoconstrictor.

Epinephrine is the most commonly used vasoconstrictor in local anesthetic solutions and pharmacologically possesses both alpha and beta agonist properties, the effects of which have been well documented.²⁻⁴ The rationale for the use of epinephrine in local anesthetic solutions is primarily to offset the inherent vasodilatory properties of the local anesthetic itself.¹ This results in increased duration of action, slower uptake by blood, and hence, lower peak blood levels (levels

which otherwise may lead to toxicity), a more profound block, and perhaps hemostasis. These effects are due to adrenoreceptor-mediated venular and arteriolar constriction at the site of injection. There appears to be minimal effect on the time of onset by the addition of a vasoconstrictor to the local anesthetic solution.¹ It should be noted that other inherent properties of the local anesthetic, such as lipid solubility and protein binding, also affect duration.

If one were to rank local anesthetics in order of their inherent vasodilatory properties (prilocaine being the least inherently vasodilating), the following relative ranking would be seen: prilocaine (0.5) < mepivacaine (0.8) < lidocaine (1.0) < bupivacaine (27).¹ It has been taught that all local anesthetics, except cocaine, are inherently vasodilating, but recent research has shown that an initial vasoconstrictor effect is often seen for mepivacaine, bupivacaine, and prilocaine. This is perhaps due to the charged form of the local anesthetic molecule displacing calcium from the nerve membrane phospholipid phosphatidyl-L-serine.^{1,5,6} Lidocaine also causes calcium displacement and thus could, conceivably, have a similar early vasoconstrictor action on peripheral blood vessels at the site of injection, although this has not been shown.¹

The major side effects of concern to the dental profession are those involving the cardiovascular system. Current recommendations are that the maximum, per appointment, dose of epinephrine for a healthy 70 kg patient should not exceed 0.2 mg (200 µg) and for a controlled cardiovascular patient should not exceed 0.04 mg (40 µg).⁷ It has also been shown that epinephrine has adverse interactions in the hyperthyroid patient (both controlled and uncontrolled), patients taking major tranquilizers, anti-depressants, (particularly tricyclics), beta blockers, halothane general anesthetics, pheochromocytoma, pregnancy, and perhaps malignant hyperthermia.^{3,8} Despite these recommendations, several clinical

studies have shown that doses much smaller than these may actually cause adverse effects. For example, Troulos et al,⁹ showed that eight cartridges of 2 per cent lidocaine 1:100,000 (144 µg), when administered to healthy adult oral surgery patients, caused a rise in plasma of epinephrine levels up to 27 times above baseline, with significant changes in systolic blood pressure, heart rate, and rate-pressure product (used as a measure of myocardial oxygen demand).⁹ Dionne et al,¹⁰ utilizing valium-sedated oral surgery patients, showed that 54 µg of epinephrine administered as three cartridges of 2 per cent lidocaine with 1:100,000 epinephrine caused a five-fold increase in circulating epinephrine levels above baseline with significant increases in measured cardiovascular parameters. The administration of 12 ml (equivalent to six dental cartridges) of lidocaine with epinephrine 1:200,000 for retrobulbar block caused a three-fold rise above baseline in circulating epinephrine levels and also caused significant cardiovascular changes.³ Finally, Lipp et al,¹¹ measured central venous epinephrine levels following administration of 2 ml of local anesthetics with 1:100,000 epinephrine by infiltration or mandibular block and found peak levels, at 4-6 minutes following injection, of 5-10 times baseline levels, and in four cases, increases of 50 times baseline.¹¹

These observations cast considerable doubt on the hypothesis that exogenous epinephrine administered in dental local anesthetic solutions is less than the amount endogenously released in response to pain and stress. Indeed, a widely utilized pre-injection safeguard procedure in major nerve block administration for some medical procedures relies on the fact that 0.015 mg (15 µg) of intravenously administered epinephrine increases heart rate 40-80 per cent above baseline.¹² Although the effects on the cardiovascular system are usually well tolerated in healthy young subjects, it is not clear whether patients with pre-existing medical problems, particularly cardiovascular disease, would tolerate the increase. The same could be said for the fearful patient whose catecholamine levels are already elevated.

Protocol

This clinical evaluation utilized a total of 30 volunteer dental students who satisfied the following inclusion and exclusion criteria. A written informed consent form was obtained from every subject after an adequate explanation of the study design and of possible adverse effects was given.

The Protocol and Document of Consent were approved by the Ethics Committee of The University of Toronto. All volunteers were randomly allocated to one of two groups: an infiltration group and a mandibular block group.

Inclusion criteria

- a) Volunteers were males or females between the ages of 18 and 50 years.
- b) Volunteers were healthy. Teeth 14 and/or 36 were present and were in satisfactory condition.
- c) Volunteers gave informed, written consent, before participating in the study.

Exclusion criteria

Subjects with any of the following conditions were excluded from the study:

- a) Allergies to amide local anesthetics or to any of the ingredients in the test solution.
- b) Pregnancy.
- c) History of any clinically significant medical conditions.
- d) Patients taking any medications which could have influenced the anesthetic assessment, such as analgesics, anti-inflammatories, or sedatives.
- e) Patients with active oral or dental pathology or undergoing treatment at the tested sites.
- f) Patients with significant restorative dental work at the tested sites.
- g) Inability to provide informed consent.

Administration of the drug

Infiltration: A standard maxillary infiltration was given in the buccal sulcus adjacent to the buccal surface of the end of the root of tooth 14. One-half cartridge of 2 per cent lidocaine with 1:200,000 epinephrine (Octocaine 200) was given, using a 25-gauge needle and self-aspirating syringe. The time of completion of the injection was registered. One operator performed all injections and each injection was given over a 30-second period.

Mandibular block: The experiment, in the mandible, followed identical protocol, with the exception that a standard left-sided, direct-thrust inferior alveolar nerve block, utilizing one cartridge of the test solution was rendered, rather than an infiltration.

One operator performed all injections and each injection was completed over a 30-second period. Routine technique and precautions were taken during administration of all injections.

Evaluation

The evaluation of onset of pulpal and

soft-tissue anesthesia and of duration were assessed with an electronic pulp tester (Analytic Technology Corp, Redmond, WA). The gingival tissue (buccal 14 and lingual 36) was tested first, followed by either tooth 14 or tooth 36.

- a) Before the anesthetic was delivered, the teeth were dried and a baseline reading was obtained. The sweep range was set, initially, at 0 and toothpaste was used as the interface media. The electrode was applied to the buccal midportion of the tooth as well as the buccal mucosa of tooth 14 at the mucogingival junction and the lingual mucosa of tooth 36. The sweep scale was gradually increased until the subject indicated a definite sensation had been felt. This baseline response was recorded. **Three initial recordings** were made at each test site and then averaged.
- b) Onset: The onset of pulpal and soft-tissue local anesthesia was assessed with an electronic pulp tester every 60 seconds from the time of injection, until the loss of sensation at the maximum pulp tester setting. This was taken as "time zero".
- c) Duration: Following determination of the time of onset of pulpal and soft-tissue anesthesia, the pulp tester was used every 10 minutes to similarly evaluate the time until the reappearance of sensation to within 20 per cent of the baseline level. Both pulpal and soft-tissue duration were assessed. Three pulp tester readings were recorded each time and then averaged.
- d) Safety evaluation: Any side effects observed or reported were to be managed as required and the details recorded on the Clinical Evaluation Form.

Results

This study utilized 30 volunteer dental students (15 in the infiltration group and 15 in the mandibular block group). However, because five of the subjects in the mandibular block group did not reach the maximum reading of 80 on the pulp tester, their data were excluded from the study. This left 11 males and four females in the infiltration group, with a mean age of 26.5 years for the males and 26.3 years for the females, and five males and five females in the mandibular block group, with a mean age of 25.8 years for the males and 25.0 years for the females.

Infiltration

Table I summarizes the data for onset and duration of pulpal and soft tissue anesthesia following infiltration of tooth 14.

Onset

We chose to administer one-half cartridge of Octocaine 200, as this is the total dose that will produce clinically adequate

anesthesia of a maxillary bicuspid tooth. All 15 subjects receiving the infiltration reached 80 on the pulp tester. The time of onset of soft tissue anesthesia ranged from 60 seconds (1 min.) to 360 seconds (6 min.), with a mean onset time of 132 ± 82.4 seconds (2.2 ± 1.4 min.). The time of onset for pulpal anesthesia ranged from 60 seconds (1 min.) to 660 seconds (11 min.), with a mean of 292 ± 197.5 seconds (4.9 ± 3.3 min.). In 10 subjects, soft tissue anesthesia preceded pulpal anesthesia.

Duration

The mean time for duration of soft tissue anesthesia following infiltration of tooth 14 was 66 ± 22.6 minutes, ranging from 30 minutes (two subjects) to 100 minutes. The mean duration of pulpal anesthesia was 60.0 ± 25.1 minutes, ranging from 20 to 110 minutes. Interestingly, only nine subjects reported that soft tissue anesthesia outlasted pulpal anesthesia.

Mandibular block anesthesia

Table II shows the time of onset and duration of anesthesia for both pulp and soft tissue for the 10 subjects who were administered one cartridge of Octocaine 200 for mandibular block. Fifteen subjects began the trial but only 10 reached the maximum pulp tester setting and are, therefore, the only ones whose data are reported here.

Onset

The mean time for onset of soft tissue anesthesia was 282 ± 187.2 seconds (4.7 ± 3.1 min.) and for pulpal anesthesia was 339 ± 190.8 seconds (5.7 ± 3.2 min.). Onset of soft tissue anesthesia preceded pulpal anesthesia in four subjects, was virtually identical in three subjects, and lagged behind onset of complete pulpal anesthesia in three others. The range for onset of both pulpal and soft tissue anesthesia was from 60 seconds to 600 seconds (10 min.).

Duration

The mean duration of soft tissue anesthesia was 121 ± 31.1 minutes and for pulpal anesthesia was 129.2 ± 37.2 minutes. In only three subjects did soft tissue anesthesia outlast pulpal anesthesia. In three others, duration was the same, while in the remaining four subjects, pulpal anesthesia actually outlasted soft tissue anesthesia. The range for soft tissue duration was 80-170 minutes and for pulpal anesthesia was 90-170 minutes.

Discussion

TABLE I

The times of onset (seconds and minutes) and duration (minutes) plus the mean ($\pm$ S.D.) times of onset and duration for infiltration using one-half cartridge of 2 per cent lidocaine with 1:200,000 epinephrine over tooth 14 in 15 subjects

Subject	Onset (seconds) of soft tissue anesthesia	Onset (seconds) of pulpal anesthesia	Duration of action (minutes) of soft tissue anesthesia	Duration of action (minutes) of pulpal anesthesia
1	120	540	90	80
2	180	540	90	70
3	180	480	100	110
4	60	180	70	60
5	240	660	30	20
6	120	420	40	30
7	60	360	70	30
8	120	120	60	70
9	60	120	90	80
10	60	60	60	70
11	60	120	80	70
12	120	180	80	30
13	120	120	50	60
14	360	360	30	40
15	120	120	50	80
Mean ($\pm$ S.D.)	132 ± 82.4 secs. 2.2 ± 1.4 mins.	292 ± 197.5 secs. 4.9 ± 3.3 mins.	66 ± 22.6 mins.	60 ± 25.1 mins.

TABLE II

The time of onset (seconds and minutes), and duration (minutes) plus the mean ($\pm$ S.D.) duration times for the mandibular block utilizing one cartridge of 2 per cent lidocaine with 1:200,000 epinephrine in 10 subjects

Subject	Onset (seconds) of soft tissue anesthesia	Onset (seconds) of pulpal anesthesia	Duration of action (minutes) of soft tissue anesthesia	Duration of action (minutes) of pulpal anesthesia
1	120	360	110	110
2	360	360	110	90
3	540	480	150	140
4	120	180	90	90
5	210	150	120	150
6	600	600	90	110
7	420	600	80	110
8	60	60	130	170
9	210	180	170	160
10	180	420	160	160
Mean ($\pm$ S.D.)	282 ± 187.2 secs. 4.7 ± 3.1 mins.	339 ± 190.8 secs. 5.7 ± 3.2 mins.	121 ± 31.1 mins.	129 ± 37.2 mins.

Onset and Duration

This investigation showed that lidocaine with epinephrine 1:200,000 (Octocaine 200) to be both efficacious and safe. As has been reported previously, in a similar study,¹³ we noted a wide individual variation in time of onset and duration of action for both hard and soft tissue for both the infiltration and the mandibular block techniques. Despite this variation, these times were very much within the clinically useful range.

The use of the electronic pulp tester has been shown to be both a safe and useful

method of testing analgesia. It is, however, difficult to extrapolate results from the pulp tester to the clinical situation.^{13,16}

Infiltration anesthesia has an understandably fast onset because of relatively thin hard and soft tissue barriers through which the local anesthetic must diffuse. As well, essentially small bare nerve endings are anesthetized. We noted that both hard and soft tissue onset following infiltration is faster than following mandibular block, (Tables I and II), despite using only one-half cartridge for the infiltration compared with one cartridge for the mandibular block.

Peripheral nerve blockade (mandibular block) occurs at a site distant from the injection site. Therefore, individual variations in patient anatomy, nerve size, accuracy of injection, accessory innervations, variable distances, local tissue conditions, and the actual tissues through which the local anesthetic solution must diffuse will cause variability in results. Non-nervous tissue also acts as a depot for the local anesthetic solution, while vascular and lymphatic absorption also compete for uptake. Finally, peripheral nerves, unlike free nerve endings, have an organizational pattern and multiple barriers to diffusion. Because of these factors, time of onset for peripheral nerve block tends to be longer than for infiltration anesthesia. Peripheral nerves exhibit an organizational pattern^{5,6} which also affects onset and duration of action. Onset of anesthesia usually follows a pattern from proximal to more distally innervated structures, with recovery in the reverse direction. The more superficial mantle layers of the nerve (proximal motor fibres) are bathed faster by the local anesthetic solution than fibres contained within the more central core (distal sensory fibres).^{1,6,17} These are only reached by inward diffusion of the uncharged local anesthetic molecules. At times, the local anesthetic, instead of diffusing into the mantle and then the core layer, may actually be carried directly to the core layer via small intraneuronal blood vessels.¹⁸ Presence of a transitional or Wedensky block may also affect evaluation of onset time in a variable fashion.⁶

The number and thickness of the various nerve sheaths (Schwann cell, myelin, endoneurium, perineurium, and epineurium) form barriers to inward local anesthetic diffusion. Thus, large, heavily sheathed peripheral nerves require a large total dose for both spread (volume) and inward diffusion (concentration). Small unmyelinated C (slow pain) fibres thus require less local anesthetic than large myelinated A (motor) fibres. Small unmyelinated C and lightly myelinated A delta fibres (both subserving pain) would block relatively quickly.^{1,5,6} As well, on average, unmyelinated nerve fibres require only 3 mm of nerve blocked by local anesthetic, while a typical myelinated fibre requires blockade of at least three successive nodes of Ranvier — at least 6 mm.^{6,18}

Finally, it appears that some nerve fibres inherently become blocked faster than others (the theory of Cm).¹⁶ For example, small autonomic fibres tend to block more quickly, followed by sensory

(in order: pain, temperature, pressure, proprioception), and finally motor fibres.⁶ This may reflect an inherent property of the nerves and/or combination of the factors discussed previously.

We observed prolonged hard and soft tissue anesthesia following mandibular block when compared to infiltration. This has been noted frequently and is due to not only to the larger dose usually required for nerve block anesthesia, but also because the thick nerve trunk and its sheaths allow the local anesthetic molecules to “stick” to lipid and protein components, thus creating shallow outward diffusion gradients.^{1,5,6}

Epinephrine appears less necessary in prolonging duration of anesthetic action when blocking major nerve trunks, (mandibular block), than when anesthetizing nerve endings, (infiltration).^{3,12,19} It has, therefore, been suggested that where epinephrine is absolutely contraindicated, a major nerve block be performed utilizing an epinephrine-free solution with sufficient anesthetic concentration to ensure inward diffusion. An example would be 4 per cent prilocaine without epinephrine.²⁰

Epinephrine

The tendency in administering any drug should be to provide the lowest dose commensurate with the desired effect. The same principles apply when administering the vasoconstrictor in local anesthetic solutions, both for medical and dental procedures. Epinephrine 1:200,000 (0.005 mg/ml or 5 µg/ml) has often been suggested to be the “ideal” concentration and is frequently utilized in both medical nerve block procedures, as well as dental procedures.^{1,5} Even the most inherently vasodilatory local anesthetic, bupivacaine, in an equipotent concentration, when compared to lidocaine, utilizes the 1:200,000 concentration of epinephrine.^{1,5,12,14} Most local anesthetics used in dentistry and medicine with similar *in vivo* potencies are currently formulated with epinephrine 1:200,000.

In this study, in which a 1:200,000 solution was used, there were no complications or adverse effects noted. Adverse reactions encountered due to vasoconstrictors include tachycardia, palpitations, cardiac dysrhythmias, hypertension, anxiety, restlessness, headache, tremor, weakness, nausea, syncope, pallor, and cold skin, all reflecting the sympathomimetic properties of the vasoconstrictor. While these may occur due to vascular absorption of epinephrine from the site of injection, direct intravascular injection would result in more rapid and prolonged

systemic effects. Also, if one concedes that the cardiovascular patient is extremely labile, these systemic effects could be even more exaggerated than in healthy patients. Not only may the higher concentrations cause adverse systemic effects, but the reactive hyperemia following initial vasoconstriction may contribute to excessive postoperative bleeding.²¹ It has further been postulated that the ischemia and resultant acidosis produced by intense vasoconstriction of the more highly concentrated solutions may impair formation of the uncharged baseform of the local anesthetic molecule, which is required for initial diffusion into the nerve membrane.²¹ Frank ischemic injury at the site of injection has also been reported with a 1:80,000 epinephrine-containing solution.²² High epinephrine concentrations may also contribute directly to ischemic injury of the nerves themselves.²¹

Fink et al,²³ described the neural pharmacokinetics of epinephrine in the rat utilizing the infraorbital nerve preparation. They found that duration was inversely proportional to the log of the epinephrine concentration, thus casting some question on the clinical doctrine that a maximal effect is produced with the 1:200,000 epinephrine concentration, which has been previously noted.^{1,7,12} Kessling and Hinds,²¹ utilizing a mandibular block in humans, found that lidocaine with 1:250,000 epinephrine was as effective in prolonging duration as lidocaine with 1:50,000 epinephrine when measured with an electronic pulp tester.²¹ Similarly, Gargarosa and Halik,²⁴ utilizing a postcard survey on patients receiving both mandibular blocks and infiltrations for dental extractions, found both the speed of onset and duration of soft tissue anesthesia not significantly different when either 2 per cent lidocaine with 1:100,000 epinephrine or 2 per cent lidocaine 1:300,000 was utilized. This would support our results, which show that lower concentrations of epinephrine (such as the 1:200,000 solution that we tested) provide clinically useful parameters while at the same time minimizing patient exposure to this vasoactive drug.

Conclusions

This study showed that lidocaine with 1:200,000 epinephrine (Octocaine 200) to be efficacious in that when evaluated with an electronic pulp tester, it showed a clinically acceptable time of onset and duration of action. Caution should be exercised in extrapolating these results to the clinical situation and more comparative trials are now indicated. This clinical

trial with Octocaine 200 also showed it to be safe and free of adverse side effects. Δ

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The role of chlorhexidine in clinical dentistry

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Winnipeg, Man.

William F. Trolenberg, DDS
San Vito, Italy

Clorhexidine gluconate is a chlorophenyl biguanide, and one of the most extensively tested antimicrobial agents with consistently positive results.¹ In medicine, chlorhexidine has been used as a general skin cleanser for presurgical preparation of the patient.² It has also been used as an antiseptic wound agent and as a preservative for ophthalmic products.^{3,4} It is of great interest to dentists because it is a highly effective plaque control agent. In addition, it has been investigated for smooth surface and root surface caries, and a denture disinfectant.⁵⁻⁷ This article briefly reviews the literature on chlorhexidine and discusses the clinical aspects of its properties, use, safety, and adverse effects as a chemotherapeutic agent in dental practice.

Substantivity

Chlorhexidine is gradually released over an extended period of time with retention of potency.^{8,9} This quality of prolonged contact time between a substance and the substrate is known as substantivity. In treating dental infections, substantivity is of utmost importance, since the agent needs a certain amount of contact time in order to exert bacteriostatic or bacteriocidal effects.¹⁰

Antimicrobial agents have been categorized according to their substantivity. Certain agents such as quaternary ammonium compounds, phenolic compounds, oxidizing agents, and plant alkaloids (sanguinarine) are characterized by low substantivity, and are referred to as "first-generation antimicrobials". When used in conjunction with conventional periodontal therapy, first-generation agents may give the clinical impression of efficacy. However, controlled clinical trials have not demonstrated their therapeutic value. Chlorhexidine has antibacterial activity and proven substantivity, and belongs to second-generation agents.^{10,11} Chlorhexidine exerts its antiplaque effect due to its ability to adhere to hydroxyapatite, pellicle, salivary glycoproteins and mucous membranes. It is gradually released from retention sites and thus exerts a bacteri-



Vijay K. Pruthi, DDS.

ostatic effect over a long period of time. The fact that the drug stays longer in the oral cavity is the key to its effectiveness.

Effects on Microbial Ecology

Chlorhexidine is bactericidal and effective against gram-positive, gram-negative and yeast organisms. Varying degrees of susceptibility to chlorhexidine has been found. *Streptococcus mutans*, *Staphylococci*, *Escherichia coli*, and *Streptococcus salivarius* appear to be highly susceptible.¹² *S. sanguis* is less susceptible and there is evidence that the proportion of this organism in plaque increases with long-term chlorhexidine use. The least susceptible are gram-negative cocci resembling *veillonella*.

A study has demonstrated that the total viable salivary bacterial count may vary with the duration of the rinsing period. It has been reported that there was an 85 to 90 per cent reduction in the total number of aerobes and anaerobes present in the saliva after 40 days of daily rinsing with 10 ml. 0.2 per cent chlorhexidine.¹³ However, a reduction of only 30 to 50 per cent could be detected after two years. This might explain the development of strains resistant to chlorhexidine as occurs with antibiotic therapy,^{14,15} although this has not been clearly demonstrated.

Chlorhexidine has proved useful in the suppression of *Candida*. Very low concentrations are capable of reducing or completely inhibiting *Candida* growth. A 0.2 per cent chlorhexidine rinse for oral candidiasis has alleviated symptoms in 6 to 17 days.¹⁶ In studies of immunocompromized patients where prophylactic administration of both topical antifungal agents such as Nystatin and Clotrimazole, and use of systemic amphotericin B for febrile episodes failed to control *Candida* infections, chlorhexidine has demonstrated a significant therapeutic advantage.¹⁷

Toxicity

A remarkably low toxicity potential has been reported due to chlorhexidine's poor absorption in mouth and gut. Experiments conducted with radiolabelled chlorhexidine indicate that mucosal and gingival penetration is minimal. Approximately 4 per cent of the oral chlorhexidine rinse is retained by swallowing, 90 per cent is excreted in the feces, and the remainder is eliminated via the urinary tract. Chlorhexidine does not accumulate in the body, nor is it metabolically altered into potentially harmful by-products.¹⁸

Uses in Dentistry

The initial report of chlorhexidine antiplaque activity was made by Schroeder in 1962.¹⁹ In 1970, Loe and Schiott²⁰ reported a total inhibition of new plaque formation and prevention of the development of gingivitis by an aqueous solution of 0.2 per cent chlorhexidine gluconate applied daily in the form of a mouthrinse. Subsequently, numerous studies have been published regarding the efficacy of chlorhexidine in suppressing the formation of dental plaque.²⁰⁻²²

As far as periodontal diseases are concerned, these are plaque-induced infections and therapeutic measures should be directed at alteration of periodontopathic organisms. Effective plaque control is necessary for treatment of periodontal diseases. Conventional treatment for gingivitis and chronic periodontitis consists of meticulous scaling, root planing and soft tissue curettage, with subsequent

oral hygiene instructions. Soft tissue resolution is largely dependent on effective daily plaque control. Application of chlorhexidine is a non-specific attempt to control microorganisms and, based on this concept, chlorhexidine has been indicated for use in periodontics.²² Several studies have been conducted to determine its efficacy using gingivitis as the experimental model. The effect of two daily 10 ml. rinses of 0.12 per cent chlorhexidine digluconate solution was compared with solutions of a quaternary ammonium compound (cetylpyridinium chloride), a phenolic compound, and a plant alkaloid (Sanguinarine). Compared to a placebo control group, two daily rinses with 0.12 per cent chlorhexidine solution for 21 days yielded a plaque reduction of 75 per cent. The quaternary ammonium compound reduced mean plaque scores by 8 per cent, the phenolic compound by 25 per cent, and the plant alkaloid by 30 per cent.^{23,24} These studies suggest the superior clinical efficacy of chlorhexidine over other antiseptics tested.¹⁰

There is no indication that chlorhexidine has any therapeutic effect on periodontitis. It should not be considered as a substitute for meticulous initial therapy and the establishment of the best conventional dental home care possible and its use should only be considered to be adjunctive in nature. However, there are other clinical situations in which the use of chlorhexidine has been advocated when conventional oral hygiene procedures cannot be adequately performed, as in the treatment of fractured jaws, during fixed banded orthodontics, and in patients with hemophilia, cerebral palsy and arthritis.²⁵

In a recent study,²⁶ a 0.12 per cent chlorhexidine gluconate mouthrinse was used in the post-surgical management of periodontal surgery patients, and the findings suggest that this is beneficial. The benefits of this therapy could be related to the topical antimicrobial properties of chlorhexidine.

Chlorhexidine gluconate has also been investigated in other clinical studies. Denture stomatitis has been treated with 0.2 per cent chlorhexidine.²⁷ However, because of its staining properties, it cannot be recommended as a denture disinfectant in patients who are susceptible to candidiasis. It has also been reported that chlorhexidine mouthwash significantly reduced the severity and duration of aphthous ulceration but not the incidence of ulceration.²⁸ In acute necrotizing ulcerative gingivitis, rinsing with 0.2 per cent chlorhexidine twice a day has been

shown to produce less painful gingival margins and papillae within one to two days, allowing more comfortable home care and scaling and root planing to be performed after about one week.²⁹

Adverse effects

The adverse effects of chlorhexidine appear to be minimal. The most common side effects include an increase in staining of teeth and other oral surfaces, a bitter taste, increase in calculus formation and dryness and burning sensations. Chlorhexidine does not appear to penetrate intact gingiva but may have toxic effects on sub-epithelial cells if exposed.³⁰ An occasional minor irritation and superficial desquamation of the oral mucosa have been noted in children using this rinse.

Chlorhexidine is poorly absorbed in the gastrointestinal tract, and if some is inadvertently swallowed, the effect is essentially negligible. No meaningful shifts in the oral microbial ecosystem or any microbial development of resistance to chlorhexidine have been reported over a six-month period.^{31,32} However, its long-term effect on the ecologic balance of flora in the gastrointestinal tract in humans is still unknown.

Conclusion

Conventional mechanical methods are preferred to the use of any chemical agent for the routine control of plaque; however, the supervised intermittent short-term use of chlorhexidine can be recommended for the control of gingivitis. Although it appears to be a safe and effective antiplaque agent for use in dentistry, unacceptable discoloration limits its long-term use as an adjunct to mechanical plaque control. It is particularly well suited for limited periods and should be reserved for special circumstances. The oral rinse is usually performed for 30 seconds to one minute twice daily. Patients who are particularly susceptible to caries may benefit from a joint prescription of chlorhexidine and fluoride. Future investigations might focus on combining chlorhexidine and fluoride into one rinse. Drug concentrations can be used, depending on patient response. Professional supervision is mandatory, as dose/response monitoring is essential in establishing therapeutic concentrations and frequency of delivery.

Availability

Chlorhexidine gluconate oral rinse 0.12 per cent (manufactured as Peridex by Procter and Gamble Co.) has been approved by the Food and Drug Administration as a prescription agent for use in

the United States. However, it is not currently manufactured in Canada, but the oral rinse can be prescribed by dentists and must be prepared individually for each patient from a stock solution. Δ

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Faculty of Dentistry

DIRECTOR, GRADUATE PROGRAM IN PERIODONTICS

Applications are invited for a full-time tenure stream appointment as Director of the Graduate Program in Periodontics at the Faculty of Dentistry. Applicants should have successfully completed a recognized graduate program in Periodontics and be eligible to sit the examination of the Royal College of Dentists (Canada).

The Candidate must be an experienced clinician with strong academic experience. Responsibilities include: administration of a fully accredited graduate Periodontics program as well as didactic and clinical teaching primarily in the graduate area, with some involvement in the undergraduate program; research; and scholarly activity. Salary and academic rank commensurate with qualifications and experience.

The position is to be filled by April 1st, 1990, or as soon as possible thereafter. Enquiries, current curriculum vitae and the names of three references should be submitted to:

Dr. J.N. Wright
Professor and Head
Department of Stomatology
Faculty of Dentistry
University of Manitoba
780 Bannatyne Avenue
Winnipeg, Manitoba R3E 0W2



FACULTY OF DENTISTRY

DALHOUSIE UNIVERSITY

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Faculty of Dentistry
Dalhousie University
Halifax, Nova Scotia
B3H 3J5

A MESSAGE TO THE DENTISTS OF CANADA

The Canadian Dental Association serves the dental profession — and through the profession the Canadian public — as the authoritative national voice and resource for dentists.

In cooperation with the provincial dental associations and affiliated organizations, the Canadian Dental Association offers services, in both official languages, intended to support and advise all areas of dentistry and to represent, protect, promote and develop the interests of the dentist as ethical practitioner, professional, educator, student, researcher, business person, citizen and individual.

The Canadian Dental Association recognizes a particular responsibility to contribute to the development of national positions and standards related to dentistry, dental education, dental research, dental equipment, dental materials and dental personnel.

The Canadian Dental Association is dedicated to the principle that all Canadians should have the best oral health care it is possible to provide; it actively seeks input from and dialogue with governments, consumers and all those interested in dentistry to enable it to serve more effectively both its members and the Canadian public.

THE CANADIAN DENTAL ASSOCIATION
NEEDS
YOUR SUPPORT

Annual Index

THE JOURNAL OF THE CANADIAN DENTAL ASSOCIATION ANNUAL INDEX Volume 55, Numbers 1 – 12.

*The format includes three separate indexes: an author, subject and book review index.
The subject headings have been assigned in accordance with those established by the National Library of Medicine.
Each entry is followed by the abbreviated month and the page number in the Journal.*

1989

AUTHORS' INDEX

A

Albert, B.S., Dec, 987-91.
Allen, G.D., Jul, 531-4.
Anderson, C., Feb, 103, Mar, 183,
Apr, 279, May, 259-60, Jul, 529,
Sep, 695-6.
Ashpole, B.R., Sep, 713-4.

B

Baker, G., Jun, 465-8.
Bennett, I.C., Aug, 631-5.
Bergman, H.R., Jun, 471-2.
Block, M., Jun, 475-6.
Blondeau, F., Nov, 915-6.
Boner, C., Jun, 475-6.
Borsuk, H.H., Apr, 285-8.
Boyd, J.B., Jun, 465-8.
Boyd, M.A., Aug, 631-5.
Brodeur, J.-M., Jan, 61-5.
Brousseau, J., Jan, 49-53.
Burgess, N.E., Sep, 699-702.
Burgess, R.C., Sep, 699-702.

C

Camarda, A.J., Jan, 49-53.
Chapman, R.J., Jun, 474-5.
Chenail, B.L., Apr, 293-5.
Cheung, W.S., Oct, 821-2.
Chin Quee, T., Dec, 967-70.
Clark, D.C., Apr, 259.
Crawford, P.R., Feb, 119-22, Mar,
164-6, May, 367-72, Jun, 461-3, Aug,
639-40, Oct, 789-91, Nov, 879-80,
887-90.

D

D'Aloisio, D.R., Sep 727-30.
Dawes, C., Sep 721-3.
Dixon, S., May, 361, Jul, 527-8,
Oct, 785.
Donaldson, D., Jul, 531-4, 535-7, 541-3.
Downar-Zapolski, B., Jul, 545-9.
Dufton, R., Jul, 498-9, Aug, 585-7,
Dec, 937-8.
Dupuis, R., Jan, 49-53.

E

Eggert, F.M., Sep, 717-9.
ElBadrawy, H.E., Oct, 815-9.

F

Feigal R.J., Oct, 793-5.
Fenton, A.H., Jun, 465-8.
Folkins, A., Sep 709-12.
Freeman, J., Jun, 465-8.
Friedman, J.R., Jun, 476-7.

G

Gamache, C., Jan, 61-5.
Gelfand, M., Apr, 309-12.
Goulet, J.-P., Jan, 55-6.
Grabi, J., Jul, 541-3.
Grace, M., Feb, 135-7.
Gusenbauer, A.W., Nov, 897-9.

H

Hann, H.J., Apr, 259.
Hardie, J., Apr, 299-301.
Hargreaves, J.A., Sep, 709-12.
Harrison, R.L., Oct, 793-5.
Hoffer, M.D., Nov, 893-5.
Hoover, J.N., Feb, 139-40, Jul, 551-4.
Houle, L., Feb, 135-7.
Hubar, J.S., Aug, 651-2.

J

Johnson, L.N., Jul, 545-9.

K

Kenny, D.J., Jan, 43-6.
Kogon, S.L., Mar, 201-7.
Kolbinson, D.A., Aug, 643-4.
Koroluk, L.D., Aug, 647-8,
Nov, 909-12.
Kost, W.J., Apr, 291-2.

L

Lachapelle, D., Jan, 61-5.
Lamy, L., May, 393-5.
Landry, R.-G., May, 393-5.
Laney, W.R., Jun 472-3.
Lanigan, D.T., Aug, 647-8.
Lapeer, G.L., Apr, 315-7.
Latner, P.A., Sep, 705-7.
Leake, J., Jul, 555-9.

Leinfelder, K.F., Jan, 34-9.
Lévy, M., Mar, 217-9.
Lenizky, R.J.J., Sep, 727-30.
Levine, N., Oct, 799-805.
Liebgott, B., Feb, 129-33.
Limeback, H., Sep 717-9.
Lipkin, J.N., Nov, 893-5.
Locker, D., Jul, 555-9.
Louka, A.N., Jan, 29-2.
Lovas, J.G.L., Mar, 209-14.

M

MacColl, S., Dec, 981-4.
Mackenzie, R.M., Aug, 623-4.
Maier, H.J., Jun, 455, Aug, 612,
Oct, 783.
Mamandras, A.H., Sep, 727-30, 733-6.
Mason, D.R., Dec, 987-91.
Maxymiw, W.G., Mar, 193-8.
McDermott, R.E., Feb, 139-40,
Jul, 551-4.
McGaw, W.T., Feb, 135-7.
McLuskey, P.N.C., Feb, 113-5.
Mills, A.R., Jul, 545-9.
Mock, D., Jun, 465-8.

N

Neufeld, B., Jul 551-4.

O

Obrazcova, K., Oct, 768.
O'Brien, G.R., Jun, 476-7.
Orr, J., Jul, 535-7.

P

Packota, G.V., Aug, 643-4.
Pasut, L.A., Sep, 705-7.
Paterson, R., May, 361, Jul, 527-8,
Oct, 785.
Pérusse, R., Jan, 55-6, Sep 737-40,
Oct, 825-9.
Porter, R., Nov, 863.
Pruthi, V.K., Dec, 995-7.

R

Raborn, G.W., Feb, 135-7.
Reid, J.A., Mar, 201-7.

Riekman, G.A., Nov, 909-12.
Roach, K.L., Feb, 111-2.
Robert, D., Jul 561-5.
Roy, S., May, 393-5.
Rubinoff, A.B., Sep, 705-7.

S

Saso, M.A., Dec, 987-91.
Schafer, A., Feb, 125-6, Mar, 189-91,
Apr, 283-4.
Sévigny, J., Jan, 61-5.
Sigal, M.J., Oct, 799-805.
Singer, D.L., Jul, 551-4, Dec, 975-79.
Slade, G., Jul, 555-9.
Slusar, M., Sep, 709-12.
Smith, D.C., Apr, 309-12.
Somaya, P., Jan, 43-6.
Srebolow, G., Feb, 129-33.
Stephens, R.G., Mar, 201-7.
Swanson, A.E., May, 383-7.
Sykora, O., May, 375-80.

T

Teteruck, W.R., Jul, 545-9.
Thompson, G.W., Sep, 709-12.
Toombs, M.E., May, 362-3, Jun, 457-8,
Aug, 626-7.
Trolenberg, W.F., Dec, 995-7.
Turcotte, J.-Y., Jan, 55-6.
Turnbull, R.S., Dec, 965-6.

W

Wainright, W.M., Nov, 883-4.
Weinberger, S.J., Oct, 807-12.
White, G.C., Nov, 897-9.
Wood, R.E., Mar, 193-8.
Wu, A., Jul, 555-9.

Y

Young, E.R., Apr, 305-8, Nov, 903-7, Dec,
981-4, 987-91.
Yusof, W.Z.W., May, 389-91.

SUBJECT INDEX

A

ACADEMY OF GENERAL DENTISTRY

Executive, Oct, 770.

ACADEMY OF SPORTS DENTISTRY

President, Sep, 684.

ACID ETCHING, DENTAL

Retention of three post and core systems with and without etching, Apr, 309-12.

ACYCLOVIR

Herpes labialis treatment with acyclovir 5 per cent ointment, Feb, 135-7.

ADULT

Edentulousness in patients attending a university dental clinic, Feb, 139-40.

AGE

Dental insurance and its effects among the elderly in Ontario, Jul, 555-9.

AIDS

Feb, 96.

AIR POLLUTION

A comparison of the effectiveness of nitrous oxide scavenging devices, Jul, 535-7.

The efficiency of nitrous oxide scavenging devices in dental offices, Jul, 541-3.

The mechanisms of nitrous oxide scavenging devices, Jul, 531-4.

ALBERTA DENTAL ASSOCIATION

Feb, 96.

ALGINATES

Surface quality of gypsums when poured against alginates, Jul, 545-9.

AMERICAN ACADEMY OF PERIODONTOLOGY

Award, Dec, 948.

AMERICAN DENTAL ASSOCIATION

Dental radiology asepsis survey, Aug, 651-2.

1988 FDI/ADA Meeting, Washington Congress, Jan, 8-9.

AMIDES

An allergic reaction following injection of local anesthetic: A case report, Dec, 981-4.

ANESTHESIA, GENERAL

The use of pulse oximetry in the immediate recovery phase following dental extractions under general anesthesia in children, Apr, 305-8.

ANESTHESIA, GENERAL — UTILIZATION

Utilization of general anesthesia by general practitioners in Saskatchewan, Nov, 909-12.

ANESTHESIA, LOCAL

Rapport de cas: Réaction à l'anesthésie locale, Nov, 915-6.

Some clinical properties of Octocaine 200 (2 per cent Lidocaine with Epinephrine 1:200,000), Dec, 987-91

ANESTHESIA, LOCAL — ADVERSE EFFECTS

An allergic reaction following injection of local anesthetic: A case report, Dec, 981-4.

ANTIBIOTICS

The role of systemic antibiotics in periodontal therapy, Dec, 967-70.

APPOINTMENTS

Dunn, W.J., RCDS President, Apr, 243.

Dugoni, A., ADA President, Jan, 18.

Jordan, R., U of Manitoba Dean, Mar, 164-6.

Overey, R.M., ADA President-Elect, Jan, 18.

Ptack, H., Chief Examiner in Prosthodontics — RCDC, Jan, 17.

Singer, D.L., Dec, 943.

ASCORBIC ACID

Vitamin C and oral health, Sep, 705-7.

ASEPSIS — QUESTIONNAIRES

Dental radiology asepsis survey, Aug, 651-2.

ASTHMA

Sulfite, asthma and vasoconstrictors, Jan, 55-6.

AUSTRALIA

Jun, 418.

AWARDS AND PRIZES

Barzilay, I., Jun, 420.

Fairbanks, B., Apr, 260.

Henderson, B., Jun, 420.

Lancitis, V.J., Sep, 676-7.

Pilliar, R., Apr, 260.

B

BEHAVIOUR — CHILD

Challenges and dilemmas in behaviour guidance of the pediatric dental patient, Oct, 793-5.

BEREAVEMENT

The Bereaved Dentist, Aug, 626-7.

The Dentist and the Bereaved Co-worker, Jun, 457-8.

The Dentist and the Bereaved Patient, May, 362-3.

BIBLIOGRAPHY

May, 340-1.

BIOCOMPATIBLE MATERIALS

All implants succeed: all implants fail: Part I, May, 367-72.

BOOK SELECTION

May, 340-1.

BRITISH COLUMBIA

Apr, 259.

BUDGETS, FEDERAL

Oct, 763-4.

The current federal budget: How it can affect dentists, Aug, 623-4.

C

CALCIUM, DIETARY

Fetal toxicity caused by excessive maternal dietary calcium, Feb, 129-33.

CALCIUM SULFATE

Surface quality of gypsums when poured against alginates, Jul, 545-9.

CANADA

Dental Education in Canada: A Bargain?, Aug, 585-7.

First year enrolment of Canadians in North American dental schools, Aug, 631-5.

CANADIAN ACADEMY OF ENDODONTICS

Executive, Mar, 170.

CANADIAN ACADEMY OF PEDIATRIC DENTISTRY

Executive, Dec, 949.

CANADIAN ACADEMY OF PERIODONTOLOGY

President, Sep, 684.

CANADIAN ARMED FORCES — STANDARDS

Feb, 95.

CANADIAN ASSOCIATION OF ORAL AND MAXILLOFACIAL SURGEONS

Executive, Dec, 949.

CANADIAN ASSOCIATION OF ORTHODONTISTS

President, May, 342.

CANADIAN DENTAL ASSOCIATION

Board of Governors

Approves Radiation Guidelines, Jul 524.

Dental Hygienists Supervision Requirements, Jan, 14-5.

Financial Report 1988, Jul, 501-2.

Committee for Dental Materials and Devices, Apr, 244.

Consumer Product Recognition

Xylitol in chewing gum: A discussion on developing CDA guidelines for the recognition of food products with dental therapeutic claims, Sep, 717-9.

Council on Health Care, Jan, 42.

Gallop Poll, Apr, 241-3.

Guidelines

Chemotherapeutic control of plaque and gingivitis, Dec, 965-6.

Infection Control — Recommendations, Apr, Insert.

Policy Statement of Sweeteners in medication, Jan, 42.

President, Aug, 591-4.

Taxation Committee

Seminars, Sep, 673-5.

Teaching Conference, Apr, 246.

Teaching Conference on Continuing Education, Aug, 597-9.

Third Party Plans Committee

Opinion, Mar, 229.

Electronic Data Interchange, Opinion, Mar, 229.

Vice-President, Apr, 244.

CANADIAN DENTAL ASSOCIATION CONVENTION

Ottawa 1990: Convention Countdown, Dec, 944.

Vancouver 1989: Convention Countdown, Jan, 11-3, Feb, 91-3, Mar, 171-7, Apr, 247-55, May, 347-55, Jun, 423-40, Jul, 507-18.

Vancouver 1989 — Results, Nov, 849-852.

CANADIAN DENTISTS' INSURANCE PROGRAM

May, 345.

CANADIAN FORCES BASE BORDEN

Graduation Ceremonies, Dec, 945.

SUBJECT INDEX

CANADIAN FORCES DENTAL SERVICES

Oct, 763-4.

CANADIAN FUND FOR DENTAL EDUCATION

Dec, 943.
Announcements, Jan, 19.
Annual Report, Apr, 263-74.
Awards, Aug, 596.
Board of Trustees, Apr, 245.
Fundraising, Oct, 769.
Research Support, May, 338.

CASE REPORT

An allergic reaction following injection of local anesthetic: A case report, Dec, 981-4.
Moebius and Poland Syndromes: A report of a case, Aug, 647-8.
Rapport de cas: Réaction à l'anesthésie locale, Nov, 915-6.
Rubenstein-Taybi syndrome, Oct, 821-2.
Reconstruction of the resected mandible using titanium implants in a free vascularized graft, Jun, 465-8.
Synovial chondromatosis of the TMJ: Case report and review of literature, Nov, 897-9.

CDSPI

Insurance, Health, Jul, 505-6.
The Quality of CDSPI Insurance: A personal experience, Feb, 111.
Retirement, Jul, 505-6.

CENTERS FOR DISEASE CONTROL

Dental radiology asepsis survey, Aug, 651-2.

CEPHALOMETRY

Facial changes in children treated with the Activator appliance: A lateral cephalometric study, Sep, 727-30.

CERAMICS

The dental laboratory and you, Aug, 612.

CERTIFICATION — HISTORY

To be or not to be: DDS or DMD, Aug, 639-40.

CHEWING GUM

Xylitol in chewing gum: A discussion on developing CDA guidelines for the recognition of food products with dental therapeutic claims, Sep, 717-9.

CHILD

Children's Book, May, 340-1.
Facial changes in children treated with the Activator appliance: A lateral cephalometric study, Sep, 727-30.
Facial swelling and asymmetry in children: Systematic diagnosis and review, Oct, 799-805.
Sugar load of oral liquid medications on chronically ill children, Jan, 43-6.
The use of pulse oximetry in the immediate recovery phase following dental extractions under general anesthesia in children, Apr, 305-8.

CHLORHEXIDINE

The role of chlorhexidine in clinical dentistry, Dec, 995-7.

CHONDROMA

Synovial chondromatosis of the TMJ: Case report and review of literature, Nov, 897-9.

CHRONIC DISEASE — DRUG THERAPY

Sugar load of oral liquid medications on chronically ill children, Jan, 43-6.

COMMUNICATION

Feb, 150.
Communication and the difficult endodontic diagnosis patient, Apr, 291-2.

COMPARATIVE STUDY

Posterior Composite Resins, Jan, 34-9.
Retention of three post and core systems with and without etching, Apr, 309-12.

COMPOSITE RESINS

Esthetic treatment of anterior teeth: Technique choices, Jan, 29-32.
The dental laboratory and you, Jun, 455.
Le polissage des résines composites, étude préliminaire par réflexion laser, Jul, 561-5.
Posterior Composite Resins, Jan, 34-9.
Retention of three post and core systems with and without etching, Apr, 309-12.

COMPUTER SYSTEMS

Nov, 853-5.

CONGRESSES

FDI/ADA Meeting, Jan 8-9.
Nov, 853-5.

CROWNS

The dental laboratory and you, Aug, 612, Oct, 783.
A review of clinical fixed prosthodontics from diagnosis to crown cementation, Nov, 893-5.

CUSPID

Rapport de cas: Réaction à l'anesthésie locale, Nov, 915-6.
Tooth loss in a selected population in Saskatoon, Jul, 551-4.

D

DELIVERY OF HEALTH CARE

D.I.D. Dialogue in Dentistry: What's it all about?, Feb, 119-2.

DENTAL AMALGAM

Posterior Composite Resins, Jan, 34-9.
The Story of Silver Amalgam (and how a Canadian changed it all), Nov, 887-90.

DENTAL AWARENESS PROGRAM UPDATE

Mar, 181-2, Apr, 261, May, 343-4, Jul, 503.
Marketing your Health Service, Sep, 682, Oct, 777, Nov, 864, Dec, 950.

DENTAL CARIES

May, 337.
Diet and dental caries, Sep, 699-702.
L'Amélioration de la qualité des soins: Nouvelle perspective, Mar, 217-9.
Sugar load of oral liquid medications on chronically ill children, Jan, 43-6.

DENTAL CARIES — PREVENTION AND CONTROL

Caries prevention with xylitol, Sep, 713-4.

DENTAL CARIES — THERAPY

Treatment modalities for primary incisors, Oct, 807-12.

DENTAL HEALTH MONTH

Mar, 161-3.

DENTAL IMPLANTATION

All implants succeed: all implants fail: Part I, May, 367-72.
All implants succeed: all implants fail: Part II, Jun, 461-3.
Osseointegrated Implants, Five Systems, Jun, 471-7.
Reconstruction of the resected mandible using titanium implants in a free vascularized graft, Jun, 465-8.
Regulations, Jun, 471.
Standards, Feb, 94.

DENTAL IMPLANTATION — METHODS

Dec, 947.

DENTAL IMPRESSION MATERIALS

Surface quality of gypsums when poured against alginates, Jul, 545-9.

DENTAL OFFICES

CDSPI Reports, May 345.
A comparison of the effectiveness of nitrous oxide scavenging devices, Jul, 535-7.
The efficiency of nitrous oxide scavenging devices in dental offices, Jul, 541-3.
The mechanisms of nitrous oxide scavenging devices, Jul, 531-4.

DENTAL PLAQUE

La spiramycine, May, 393-5.

DENTAL PLAQUE — PREVENTION AND CONTROL

Chemotherapeutic control of plaque and gingivitis, Dec, 965-6.

DENTAL POLISHING

Le polissage des résines composites, étude préliminaire par réflexion laser, Jul, 561-5.

DENTAL PORCELAIN

The dental laboratory and you, Aug, 612, Oct, 783.

DENTAL TECHNICIANS — EDUCATION

Dental Technology Education in Canada, May, 375-80.

DENTIST-PATIENT RELATIONS

Communication and the difficult endodontic diagnosis patient, Apr, 291-2.

DENTISTS

The Bereaved Dentist, Aug, 626-7.

DENTISTRY — EDUCATION

May, 340-1.

DENTISTRY — TRENDS

Apr, 258.

DENTSPLY

Nov, 856, Dec, 949.

DENTURE, PARTIAL, FIXED

A review of clinical fixed prosthodontics from diagnosis to crown cementation, Nov, 893-5.

DIAGNOSIS, DIFFERENTIAL

Diagnostic différentiel des masses cervicales, Sep, 737-40.
Diagnostic différentiel des masses cervicales, Oct, 825-9.
Facial swelling and asymmetry in children: Systematic diagnosis and review, Oct, 799-805.

DIASTEMA

Esthetic treatment of anterior teeth: Technique choices, Jan, 29-32.

DIET

Diet and dental caries, Sep, 699-702.

E

EDEMA — DIAGNOSIS

Facial swelling and asymmetry in children: Systematic diagnosis and review, Oct, 799-805.

EDITORIAL

Advertising, Sep, 671.
Canadian Dental Association, Jun, 415.
Choice Behaviour, Apr, 239.
Communication, Feb, 150.
Dental Caries, Oct, 837-8.
Dental Implantation, Endosseous, May, 335.
Dental Radiography, Jul, 573, 574.
Education, Dental, Continuing, Aug, 583.
Electronic Data Interchange, Mar, 229, Jun, 486.
Financial Support, May, 406.
Insurance, Feb, 87.
Journalism, dental, Jan, 7.

SUBJECT INDEX

Mandibular Anterior Crowding, Aug, 662.
Membership, Dec, 935.
Partnership Practice, Dental, Nov, 926.
Quality of Health Care, Apr, 326.
Questions and Answers, Oct, 761.
Smiling, Mar, 159.
Temporomandibular Disorder — Diagnosis, Sep, 749-50.
Temporomandibular Disorder — Therapy, Sep, 749-50.
Vision, Nov, 847.

EDUCATION, DENTAL

Dental Education in Canada: A Bargain?, Aug, 585-7.
Ethics in Canadian Dentistry and Dental Education, Dec, 937-8.

EDUCATION, DENTAL, CONTINUING

Dental Education in Canada: A Bargain?, Aug, 585-7.

EDUCATION, DENTAL, CONTINUING COURSES

Aug, 615-9, Dec, 953-7.

EDUCATION, DENTAL — TRENDS

A survey of Canadian pediatric dentists: Practice characteristics and views on dental education, Oct, 815-9.

ELECTRONIC DATA INTERCHANGE

Sep, 679-81.
Interview, Dec, 939-41.

EPINEPHRINE

Some clinical properties of Octocaine 200 (2 per cent Lidocaine with Epinephrine 1:200,000), Dec, 987-91.

EQUIPMENT DESIGN

A comparison of the effectiveness of nitrous oxide scavenging devices, Jul, 535-7.
The efficiency of nitrous oxide scavenging devices in dental offices, Jul, 541-3.
The mechanisms of nitrous oxide scavenging devices, Jul, 531-4.

ESTHETICS, DENTAL

Esthetic treatment of anterior teeth: Technique choices, Jan, 29-32.

ETHICS, DENTAL

Apr, 246.
Dental Ethics [series], What ethics is not, Feb, 125-6.
Getting the balance right, Mar, 189-91, Challenge and crisis, Apr, 283-4.
Ethics in Canadian Dentistry and Dental Education, Dec, 937-8.

F

FACIAL ASYMMETRY — DIAGNOSIS

Facial swelling and asymmetry in children: Systematic diagnosis and review, Oct, 799-805.

FACIAL PARALYSIS

Moebius and Poland Syndromes: A report of a case, Aug, 647-8.

FEDERAL/PROVINCIAL HEALTH COUNCIL

Annual Meeting, Feb, 90.

FÉDÉRATION DENTAIRE INTERNATIONALE

Amsterdam Congress, Mar, 167, May, 337.
1988 Washington Congress, Jan, 8-9.
Chief Dental Officers, Jan 9.
Distributes AIDS leaflets, Feb, 96.
President, Dec, 943.
Technical Report, Jun, 420.

FEEDING BEHAVIOUR

Mar, 163.

FEES AND CHARGES

Mar, 168.

FETAL DEVELOPMENT — TOXICITY

Fetal toxicity caused by excessive maternal dietary calcium, Feb, 129-33.

FLUORIDATION

Apr, 259.

FLUORIDES — DIAGNOSTIC USE

Fluorides: Mechanisms of action and recommendations for use, Sep, 721-3.

FOOD HABITS

Fréquence de consommation d'aliments chez des enfants: Jours de semaine versus fin de semaine, Jan, 61-5.

G

GANGLIA

Diagnostic différentiel des masses cervicales, Sep, 737-40.

GENERAL PRACTICE, DENTAL

Feb, 150.

GINGIVAL HYPERPLASIA

Nifedipine-induced gingival hyperplasia, May, 389-91.

GINGIVITIS — PREVENTION AND CONTROL

Chemotherapeutic control of plaque and gingivitis, Dec, 965-6.

GLOVES, SURGICAL

Aug, 600.

GLUTARALDEHYDE

May, 338.

H

HEAD AND NECK NEOPLASMS

The role of dentistry in head and neck radiation therapy, Mar, 193-8.

HEALTH AND WELFARE CANADA

Equipment Safety, Jul, 497.

HEALTH SURVEYS

Infection Control Survey — 1988: A Canadian Dental Association Project, Apr, 299-301.
Utilization of general anesthesia by general practitioners in Saskatchewan, Nov, 909-12.

HEALTH SURVEYS — CHILD

A survey of Canadian pediatric dentists: Practice characteristics and views on dental education, Oct, 815-9.

HERPES LABIALIS — DRUG THERAPY

Herpes labialis treatment with acyclovir 5 per cent ointment, Feb, 135-7.

HONOURS

Charest, A., Mar, 170.
Gryfe, J.H., Aug, 590.
Henderson, B., Jan, 18.
Jackson, B.M., Aug, 590.
Kamachi, Y., Aug, 590.
McIntyre, R., Mar, 170.
Ten Cate, R., Sep, 678.
Treleaven, W.H., Aug, 590.

HOSPITAL FOR SICK CHILDREN

Mar, 163.

HYPERCALCEMIA

Fetal toxicity caused by excessive maternal dietary calcium, Feb, 129-33.

HYPERSENSITIVITY

An allergic reaction following injection of local anesthetic: A case report, Dec, 981-4.

I

INDIANS, NORTH AMERICAN

Moebius and Poland Syndromes: A report of a case, Aug, 647-8.

INFECTION CONTROL

Infection Control Survey — 1989: A Canadian Dental Association Project, Apr, 299-301.

INFECTION CONTROL — RECOMMENDATIONS

Apr, insert.

INFORMED CONSENT

Removing the mandibular third molar: Neurosensory deficits and consequent litigation, May, 383-7.

INCISOR

Treatment modalities for primary incisors, Oct, 807-12.

INJECTIONS

An allergic reaction following injection of local anesthetic: A case report, Dec, 981-4.

INSURANCE

Malpractice Insurance: A highly specialized field, Feb, 113-5.
The Quality of CDSPI Insurance: A personal experience, Feb, 111.

INSURANCE, DENTAL

Dental insurance and its effects among the elderly in Ontario, Jul, 555-9.
The new CDA uniform system of codes [series], Oct, 789-91, Nov, 879-80.

INSURANCE BENEFITS

The Quality of CDSPI Insurance: A personal experience, Feb, 111.

INSURANCE CARRIERS

The Quality of CDSPI Insurance: A personal experience, Feb, 111.

INSURANCE, LIABILITY

Malpractice Insurance: A highly specialized field, Feb, 113-5.

INTERNATIONAL ASSOCIATION OF DENTISTRY FOR CHILDREN

Executive, Oct, 775.

INTERNATIONAL COLLEGE OF DENTISTS

Feb, 97.

INTERVIEW

Dolansky, B., Dec, 939-41.
Roach, K., Aug, 591-4.

J

JAW, EDENTULOUS

Edentulousness in patients attending a university dental clinic, Feb, 139-40.
Tooth loss in a selected population in Saskatoon, Jul, 551-4.

JORDAN, RON

Mar, 164-6.

JOURNAL OF THE AMERICAN DENTAL ASSOCIATION

Apr, 258.

JOURNALISM, DENTAL

Oct, 765-7, Nov, 857-9.

L

LABORATORIES, DENTAL

The dental laboratory and you, Jun, 455, Aug, 612, Oct, 783.

LASERS

Le polissage des résines composites, étude préliminaire par réflexion laser, Jul, 561-5.

LATVIA

Oct, 768.

LEGISLATION, DENTAL

Jun, 417.

LETTERS

Advertisement Complaint, Gordon, M, Jul, 525.
Alcoholic Beverages, Christianson, M.L., Nov, 866.
Astrology, Charette, L.-R., Feb, 107.
Canadian Dentists in China, Mullett, J.A., May, 357.
Canadian Dentists' Insurance Plans, Niedermayer, J.W., May, 357.
Canadian Dentists' Insurance Plans, Bates, A.E., May, 357.
Canadian Fund for Dental Education, Ramage, T.E.M., Nov, 866.
Capitation Fee, Watson, P., Feb, 106.
December Journal, Burgman, G.E., Apr, 275.
Dental Hygienists, Williams, Ellen, Apr, 275.
Dental Materials, McComb, D, Jul, 525.
Dental Materials, Stevenson-Moore, P., Dec, 960.
Dialogue in Dentistry, Criton, J., May, 357.
Dialogue in Dentistry, Rossoff, L.P., May 357.
Dr. Rizk, Ryding, B.B., Apr, 275.
Fluoridation, McDonald, P., Feb, 106.
Gloves, Surgical, Hardie, J., Feb, 107.
Infection Control, Freedman, Gary L., Jan, 20.
Insurance, Rustebakke, D.A., Jul, 525.
Insurance Carriers, Niedermayer, J.W., May, 357.
Insurance Carriers, Bates, A.E., May, 357.
Metropolitan Life, Niedermayer, J.W., May, 347.
Metropolitan Life, Bates, A.E., May, 347.
Molar, Third, Boyko, G., Sep, 690.
Molar, Third, Lazare, M., Jun, 453.
Molar, Third, Maxymiw, W.G., Nov, 866.
Molar, Third, Price, C., Jun, 453.
Molar, Third, Shafer, S., Jun, 453.
Molar, Third, Stevens, R.G., Jun, 453.
Mottled Enamel, Nikiforuk, G., Feb, 106.
Multiple Sclerosis, Munroe, J., Jul, 525.
Quest, Blatchford, W.G., Nov, 865.
Quest, Sinclair, D., Dec, 960.
Radiography, Dental, Hubar, J.S., Aug, 588-9.
Radiography, Dental, Maxymiw, W.G., Nov, 866.
Radiotherapy, Epstein, J and Stevenson-Moore, P., Dec, 960-61.
Response: Original Material, Kerr, J., Aug, 610.
Response: Paget's Disease, Camarda, A.J., Jun 451-2.
Response: Paget's Disease, Lee, L., Jun, 451.
Response: Paget's Disease, Sandor, G.K.B., Jun, 452.
Response: Surgical Gloves, Hardie, J., Aug, 610.
Le SIDA, Pérusse, R., Feb, 107-8.
Triazolam, Young, E.R., Jan, 20.

LEUCOMYCINS

La spiramycine, May, 393-5.

LIDOCAINE

Some clinical properties of Octocaine 200 (2 per cent Lidocaine with Epinephrine 1:200,000), Dec, 987-91.

LYMPH NODES

Diagnostic différentiel des masses cervicales, Sep, 737-40.
Diagnostic différentiel des masses cervicales, Oct, 825-9.

M

MALPRACTICE

Malpractice Insurance: A highly specialized field, Feb, 113-5.
Removing the mandibular third molar: Neurosensory deficits and consequent litigation, May, 383-7.

MANDIBLE

Reconstruction of the resected mandible using titanium implants in a free vascularized graft, Jun, 465-8.

Tooth loss in a selected population in Saskatoon, Jul, 551-4.
The use of nuclear medicine in the diagnosis of Paget's Disease of the mandible: Report of a case, Jan, 49-53.

MANITOBA DENTAL ASSOCIATION

Jul, 498-9.

MAXILLA

Tooth loss in a selected population in Saskatoon, Jul, 551-4.

MERCURY

The Story of Silver Amalgam (and how a Canadian changed it all), Nov, 887-90.

MOLAR

Orthodontic treatment of impacted first permanent maxillar molars, Sep, 733-6.

MOLAR, THIRD

Removing the mandibular third molar: Neurosensory deficits and consequent litigation, May, 383-7.

MOLAR, THIRD — ABNORMALITIES

The unerupted or impacted third molar: A critical appraisal of its pathologic potential, Mar, 201-7.

MOLAR THIRD — SURGERY

The unerupted or impacted third molar: A critical appraisal of its pathologic potential, Mar, 201-7.

MOUTH NEOPLASMS

Oral precancer: Patterns, complexities, and clinical guidelines, Mar, 209-14.

MOUTH REHABILITATION

Reconstruction of the resected mandible using titanium implants in a free vascularized graft, Jun, 465-8.

MOUTHWASHES

Chemotherapeutic control of plaque and gingivitis, Dec, 965-6.

N

NECK

Diagnostic différentiel des masses cervicales, Sep, 737-40.
Diagnostic différentiel des masses cervicales, Oct, 825-9.

NEILSON, A. JARDINE

May, 342.

NEW BRUNSWICK DENTAL SOCIETY

President, Oct, 775.

NEW ZEALAND

Jun, 417.

NIFEDIPINE

Nifedipine-induced gingival hyperplasia, May, 389-91.

NITROUS OXIDE

A comparison of the effectiveness of nitrous oxide scavenging devices, Jul, 535-7.
The efficiency of nitrous oxide scavenging devices in dental offices, Jul, 541-3.
The mechanisms of nitrous oxide scavenging devices, Jul, 531-4.

NORTH AMERICA

First year enrolment of Canadians in North American dental schools, Aug, 631-5.

NUCLEAR MEDICINE

The use of nuclear medicine in the diagnosis of Paget's Disease of the mandible: Report of a case, Jan, 49-53.

NUTRITION

Diet and dental caries, Sep, 699-702.
Nutritional assessment: A computer-based, dietary analysis, Sep, 709-12.

NUTRITION SURVEYS

Fréquence de consommation d'aliments chez des enfants: Jours de semaine versus fin de semaine, Jan, 61-5.

O

OBITUARIES

Alexander, L.B., Aug, 596.
Archibald, L.J., May, 404.
Bichay, W.F., Aug, 596.
Bishop, B.A., Sep, 712.
Blackstock, R.S., Dec, 961.
Brunton, F.M., Feb, 95.
Camerson, A.F., Jan, 71.
Caza, H., Aug, 596.
Choquette, R., Dec, 961.
Compton, C.M., Jan, 71.
Cook, W.F., Apr, 324.
Cooper, R., Sep, 712.
Coughlan, A.J., Jan, 17.
Couture, P., May, 404.
Craig, J.L., Apr, 324.
Dunnett, F.H., May, 404.
Eaton, D., Feb, 95.
Easter, L., Feb, 95.
Erickson, V.M., Jan, 71.
Fyffe, A.E., May, 404.
Fyffe, E.D., Dec, 961.
Gaudet, G.A., Nov, 860.
Godsoe, W.H., Jan, 71.
Grierson, D.W., Aug, 596.
Halpenny, S., Sep, 678.
Harper, S., Apr, 324.
Harron, W.G., Apr, 324.
Heidgerken, G., Mar, 222.
Holmes, L.S., Nov, 860.
Holt, S.W., Mar, 222.
Hughes, A.E., Aug, 596.
Hunter, H.A., Nov, 860.
Hurst, D.K., Apr, 324.
Jamieson, H.S., 404.
Johnston, G., Aug, 596.
Laba, J.P., Dec, 947.
Lalonde, F., Dec, 961.
Larue, C.A., Sep, 712.
Larue, L.-J., May, 404.
Layton, N.M., Feb, 95.
Law, M.E., Nov, 860.
Leblanc, C., Dec, 944.
Leith, A., Spe, 712.
Leslie, S.W., Feb, 95.
Lustig, E.A., Sep, 712.
Markle, R.P., Dec, 961.
Massicotte, G., Dec, 961.
Matheossian, V., Mar, 222.
MacNicol, T.K., Apr, 324.
McCauley, G., Apr, 324.
McCutcheon, J.O., Mar, 222.
Mesplier, E., Oct, 779.
Miller, L.W., Jan, 71.
Miller, W., Oct, 768.
Mitchell, F., Apr, 324.
Montgomery, J.G., Jan, 71.
Orfanidis, I., Dec, 949.
Otto, W.G.W., Oct, 779.
Pankey, L.D., Aug, 587.
Paradis, P., Apr, 324.
Paré, M., Mar, 222.
Perreault, L.P., Mar, 222.
Peterkin, S.T., Jan, 71.
Philip, W.W., Sep, 712.
Porter, C.M., May, 404.
Robinson, W.G., Oct, 779.
Sarbit, S.W., Feb, 95.
Scott, R.L., Feb, 95.
Scott, R.W., Jan, 71.
Short, H., Oct, 779.
Starr, R.M., Mar, 222.
Steen, M.R., Feb, 95.
Teske, D.R., Dec, 961.
Thomas, Jack, Mar, 169.
Walker, J.G., Jan, 71.
Wilkins, G.S., Mar, 222.

ONTARIO

Dental insurance and its effects among the elderly in Ontario, Jul, 555-9.

ONTARIO DENTAL ASSOCIATION

President, Aug, 590.

ONTARIO SOCIETY OF ORTHODONTICS

Executive, Jul, 504.

Name change, Jul, 504.

ONTARIO SOCIETY OF PERIODONTISTS

Executive, Aug, 600.

ORAL HEALTH

Jun, 418.

Dental insurance and its effects among the elderly in Ontario, Jul, 555-9.

Vitamin C and oral health, Sep, 705-7.

ORTHODONTIC APPLIANCES

Orthodontic treatment of impacted first permanent maxillary molars, Sep, 733-6.

ORTHODONTIC APPLIANCES, REMOVABLE

Facial changes in children treated with the Activator appliance: A lateral cephalometric study, Sep, 727-30.

ORTHODONTICS

Diagnostic Use, Nov, 883-4.

OSTEITIS DEFORMANS

The use of nuclear medicine in the diagnosis of Paget's Disease of the mandible: Report of a case, Jan, 49-53.

OXIMETRY

The use of pulse oximetry in the immediate recovery phase following dental extractions under general anesthesia in children, Apr, 305-8.

P

PAIN, INTRACTABLE

Psychiatric referral for craniomandibular pain patients, Apr, 315-7.

PEDODONTICS

A survey of Canadian pediatric dentists: Practice characteristics and views on dental education, Oct, 815-9.

PERIODONTAL DISEASES

La spiramycine, May, 393-5.

PERIODONTAL DISEASES — SURGERY — TRENDS

Periodontal surgery: what's new?, Dec, 975-9.

PERIODONTAL DISEASES — THERAPY

The role of systemic antibiotics in periodontal therapy, Dec, 967-70.

PERIODONTITIS — THERAPY

The role of systemic antibiotics in periodontal therapy, Dec, 967-70.

PERIODONTIUM — SURGERY — TRENDS

Periodontal surgery: what's new?, Dec, 975-9.

POLAND SYNDROME

Moebius and Poland Syndromes: A report of a case, Aug, 647-8.

POST TECHNIC

Retention of three post and core systems with and without etching, Apr, 309-12.

PRACTICE MANAGEMENT, DENTAL

Money Management [series], May, 361, Jul, 527-8, Oct, 785.

Practice Prosperity [series], Jan, 21, Feb, 103, Mar, 183, Apr, 279, May, 359-60, Jul, 529, Sep, 695-6.

PRECANCEROUS CONDITIONS

Oral precancer: Patterns, complexities, and clinical guidelines, Mar, 209-14.

PRESIDENT'S COLUMN

Accreditation, Jun, 416.

Advertising, Oct, 762.

CDA Executive Council, Sep, 672.

Dental Health Month, Mar, 160.

Ethics, dental, May 336.

Fees, dental, Jul, 495.

Insurance, Feb, 88.

Looking Back, Aug, 584.

Membership, Nov, 848.

Organizational objectives, Jan, 6.

Self Image, Apr, 240.

PROFESSIONAL COMPETENCE

Feb, 89

PSYCHIATRY

Psychiatric referral for craniomandibular pain patients, Apr, 315-7.

PSYCHOLOGICAL TECHNIQS — CHILD

Challenges and dilemmas in behaviour guidance of the pediatric dental patient, Oct, 793-5.

Q

QUÉBEC ASSOCIATION OF ORTHODONTISTS

Executive, Mar, 170.

QUEST

Jul 498-9, Jul 500.

QUESTIONNAIRES

Dental Awareness Program Update, May, 343-4.

R

RADIATION — ADVERSE EFFECTS

The role of dentistry in head and neck radiation therapy, Mar, 193-8.

RADIOGRAPHY, DENTAL — UTILIZATION

Patient selection criteria for dental radiography, Aug, 643-4.

RADIOTHERAPY — ADVERSE EFFECTS

The role of dentistry in head and neck radiation therapy, Mar, 193-8.

REES, RUTH

May, 340-1.

REFERRAL AND CONSULTATION

Psychiatric referral for craniomandibular pain patients, Apr 315-7.

RESOURCE CENTRE DE DOCUMENTATION

Anesthesia, Oct, 776.

Child, Oct, 776.

Chlorhexidine, Jan, 24.

Dental Care of Handicapped, Feb, 102.

Dental Implantation, May, 346.

Dental Staff, Jun, 444.

Malignant Hyperthermia, Mar, 184.

Malpractice, Apr, 276.

Nitrous Oxide, Jul, 520.

Periodontal Diseases, Dec, 962.

Premedication, Sep, 686.

Salivary Gland Diseases, Nov, 874.

Temporomandibular Joint Diseases, Aug, 605.

RETIREMENT

Nov, 863.

ROACH, KEVIN

Goals and Objectives, Aug, 591-4.

ROOT CANAL FILLING MATERIALS

Endodontic failures and retreatment, Apr, 285-8.

ROOT CANAL THERAPY

Communication and the difficult endodontic diagnosis patient, Apr, 291-2.

Endodontic failures and retreatment, Apr, 285-8.

An evaluation of clinical endosonics, Apr, 293-5.

ROYAL COLLEGE OF DENTISTS OF CANADA

Executive 1988-9, Jan, 16-7.

Executive 1989-91, Nov, 861.

Fellowship, Nov, 861.

President, Apr, 243.

RUBENSTEIN-TABYI SYNDROME

Rubenstein-Taybi syndrome, Oct, 821-2.

S

SASKATCHEWAN

Tooth loss in a selected population in Saskatoon, Jul, 551-4.

SCHOOLS

First year enrolment of Canadians in North American dental schools, Aug, 631-5.

SILVER

The Story of Silver Amalgam (and how a Canadian changed it all), Nov, 887-90.

SPECIALITIES, DENTAL

Opinion, Feb, 150.

STUDENTS, DENTAL

Dental Education in Canada: A Bargain?, Aug, 585-7.

First year enrolment of Canadians in North American dental schools, Aug, 631-5.

SUCROSE — ADVERSE EFFECTS

Sugar load of oral liquid medications on chronically ill children, Jan, 43-6.

SULPHITES

Sulfite, asthma and vasoconstrictors, Jan, 55-6.

SURGERY, ORAL

Reconstruction of the resected mandible using titanium implants in a free vascularized graft, Jun, 465-8.

SURGERY, ORAL — ADVERSE EFFECTS

Removing the mandibular third molar: Neurosensory deficits and consequent litigation, May, 383-7.

SWEETENING AGENTS

CDA Policy Statement on Sweeteners in Medication, Jan, 42.

SYNOVIAL MEMBRANE

Synovial chondromatosis of the TMJ: Case report and review of literature, Nov, 897-9.

SYRINGES

Rapport de cas: Réaction à l'anesthésie locale, Nov, 915-6.

T

TEMPOROMANDIBULAR JOINT DISEASES

Synovial chondromatosis of the TMJ: Case report and review of literature, Nov, 897-9.

THERAPEUTIC CULTS

Jul, 498-9.

THYROID GLAND

The thyroid gland and the dental practitioner, Nov, 903-6.

TITANIUM

Reconstruction of the resected mandible using titanium implants in a free vascularized graft, Jun, 465-8.

TOOTH, DECIDUOUS

Treatment modalities for primary incisors, Oct, 807-12.

SUBJECT INDEX • BOOK REVIEW INDEX

TOOTH, IMPACTED

Orthodontic treatment of impacted first permanent maxillary molars, Sep, 733-6.

Rapport de cas: Réaction à l'anesthésie locale, Nov, 915-6.

Removing the mandibular third molar: Neurosensory deficits and consequent litigation, May, 383-7.

The unerupted or impacted third molar: A critical appraisal of its pathologic potential, Mar 201-7.

TOOTH, UNERUPTED

The unerupted or impacted third molar: A critical appraisal of its pathologic potential, Mar 201-7.

TOOTH DISCOLORATION

Esthetic treatment of anterior teeth: Technique choices, Jan, 29-32.

TOOTH EXTRACTION

The use of pulse oximetry in the immediate recovery phase following dental extractions under general anesthesia in children, Apr, 305-8.

U

ULTRASONICS

An evaluation of clinical endosonics, Apr, 293-5.

UNITED STATES

First year enrolment of Canadians in North American dental schools, Aug, 631-5.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Medical Waste, Jun, 418.

UNIVERSITY OF TORONTO

Faculty of Dentistry, Dean, Sep, 684.

Institute of Health Management, Jun, 419.

V

VASOCONSTRICTOR AGENTS

Some clinical properties of Octocaine 200 (2 per cent Lidocaine with Epinephrine 1:200,000), Dec, 987-91.

Sulfite, asthma and vasoconstrictors, Jan, 55-6.

VIDEOTAPE RECORDING

Feb, 96.

VOLUNTARY WORKERS

Jul, 504.

W

WORLD HEALTH ORGANIZATION

May, 337.

WOUND HEALING

Periodontal surgery: what's new?, Dec, 975-9.

X

XYLITOL

Caries prevention with xylitol, Sep, 713-4.

Xylitol in chewing gum: A discussion on developing CDA guidelines for the recognition of food products with dental therapeutic claims, Sep, 717-9.

BOOK REVIEW INDEX

A

Allen, G.B. and Hayden J., Complications of Sedation and Anesthesia in Dentistry, reviewed by E.R. Young, Mar, 185-6.

Avery, J.K. editor, Oral Development and Histology, reviewed by G.H. Sperber, Jan, 25.

B

Banks, P., Killey's Fractures of the Middle Third of the Facial Skeleton, 3rd Edition, reviewed by D.T. Lanigan, Feb, 105.

C

Carlson, O., Dental Morphology, reviewed by G.H. Sperber, Dec, 963.

Cohen, E.S., Atlas of Periodontal Surgery, reviewed by J.I. Kershman, Oct, 778.

Craig, R.G. editor, Restorative Dental Materials, reviewed by A.N. Louka, Nov, 871-2.

D

Dummett, C.O. and L.D. Dummett, The Hillenbrand Era: Organized Dentistry's Glanzperiode, reviewed by R.G. DeBrouwere, Sep, 688.

E

Ekstrand, J. Fejerskov, O., and Silverstone, L.M., editors, Fluoride in Dentistry, reviewed by G. Nikiforuk, Sep, 688.

Epker B.N. and Fish, L.C., Dentofacial Deformities — Integrated Orthodontic and Surgical Correction, reviewed by J.B. Curran, May, 364-5.

G

Grossman, L.I., Oilet, S., and del Rio, C.E., Endodontic Practice, 11th Edition, reviewed by J. Roskies, Mar, 185.

Guggenheim, B. editor, Periodontology Today, reviewed by R.D. Oles, Aug, 607.

H

Held, A.-J., Periodontology: From its Origins up to 1980, reviewed by J.E. Stakiw, Dec, 963.

Holroyd, S.V., Wynn, R.L. and Requaz-Clark, B., Clinical Pharmacology in Dental Practice, reviewed by W.C. Sturtridge, Jul, 522.

J

Jong, A.W., editor, Community Dental Health, reviewed by A.I. Ismail, Sep, 687.

K

Katsev, R.A., Partial Denture Design: A Lingual Locking Approach, reviewed by T.J. Harrop, Sep, 687-8.

Kratochvil, F.J., Partial Removable Prosthodontics, reviewed by J.F. Wolfaardt, Jun, 445.

Kussick, L., Bone Remodeling Orthodontics by Jaw Repositioning and Alveolar Growth, reviewed by D. Woodside, May, 364.

L

Lamb, D.J., Appearance and Aesthetics in Denture Practice, reviewed by J.F. Cox, Apr, 278.

Leimone, C.A. and Earl, E.M. editors, Dental Assisting — Basic and Dental Sciences, reviewed by E. Wesley, Jan 26-7.

Leinfelder K.F. and Lemons, J.E., Clinical Restorative Materials and Techniques, reviewed by D.C. Smith, Aug, 607.

M

Mason, R.A., A Guide to Dental Radiography, reviewed by C. Price, Apr, 277.

Mathewson, R.J., Primosch, R.E. and Robertson, D., Fundamentals of Pediatric Dentistry, reviewed by A. Milnes, May, 365.

McCarthy, F.W., Essentials of Safe Dentistry for the Medically Compromised Patient, reviewed by E.R. Young, Nov, 871.

McDonald, R.E. and Avery, D.R., Dentistry for the Child and Adolescent, 5th Edition, reviewed by S. Schwartz, Feb, 105.

Mohl, N.D. et al editors, A Textbook of Occlusion, reviewed by R.D. Oles, Apr, 277.

Mumford, J.M. and Jedynakiewicz, N.M., Principles of Endodontics, reviewed by H.H. Borsuk, Jun, 445.

N

Nakajima, E. and West, V.C editor, Introduction to Bioprogessive Therapy, reviewed by K. Glover, Feb, 104.

P

Pederson, G.W., Oral Surgery, reviewed by M. Aidelbaum, Nov, 871.

Peterson, L.J., Ellis, E., Hupp, J., and Tucker, M., Contemporary Oral and Maxillofacial Surgery, reviewed by B.K. Arora, Jan, 26.

Pinkham, J.R. et al, Pediatric Dentistry: Infancy Through Adolescence, reviewed by I. McConnachie, Jan, 27.

Preston, J.D. editor, Perspectives in Dental Ceramics: Proceedings of the Fourth International Symposium on Ceramics, reviewed by M.G. Doyle, Mar, 186.

R

Robertson, P.R. and Greenspan, J.S., Perspectives on Oral Manifestations of AIDS — Diagnosis and Management of HIV-Associated Infections, reviewed by J. Hardie, Aug, 607-8.

S

Seward, G.R., Harris, S.M. and D.A. McGowan, Killey and Kay's Outline of Oral Surgery, Part I, reviewed by B.K. Arora, Jan, 25.

Solnit, A. and Curnutte, D.C., Occlusal Correction, reviewed by R.D. Oles, Feb, 104-5.

Stratton, R.J. and Wiebelt, F.J., An Atlas of Removable Partial Denture Design, reviewed by J.F. Wolfaardt, Aug, 608.

T

Tamura, K., and Fowler, J. Jr., Essentials of Dental Technology, reviewed by J.K. Sutherland, Jun, 445-6.

Topazian, R.G. and Goldberg, M.H., Oral and Maxillofacial Infections, 2nd Edition, reviewed by J.H. Gryfe, Oct, 778.

V

van der Waal, I. and Pindborg, J., Diseases of the Tongue, reviewed by S. Silverman, Mar, 186.

van der Waal, I. and van der Kwast, W.A.M., Oral Pathology, reviewed by R. Priddy, Jul, 522-3.

W

Waxman, D., Harland's Medical and Dental Hypnosis, 3rd Edition, reviewed by E.R. Young, Oct 779.

Wilson, H.J., Mansfield, M.A., Heath, J.R. and Spence, D., Dental Technology and Materials for Students, reviewed by R.M. Brygider, Jul, 522.

Wilson, H., McLean, J. and Brown, D., Dental Materials and their Clinical Applications, reviewed by I. Stangel, Oct 778-9.

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COMMUNIQUÉ

Une revue trimestrielle à l'intention des gens atteints d'arthrite. Des articles de fond sur l'arthrite, les méthodes de traitement, les progrès de la recherche et l'aide aux arthritiques.

Pour vous renseigner sur la revue *Communiqué*, adressez-vous à:
La Société d'Arthrite,
Bureau 401,
250, rue Bloor est,
Toronto (Ontario). M4W 3P2



FACE
FACTS...

^(acyclovir) **ZOVIRAX** OINTMENT 5% (4 g and 15 g tubes)

INDICATIONS AND CLINICAL USE: ZOVIRAX Ointment 5% is indicated for the management of initial episodes of genital herpes simplex infections. It is also indicated in the management of nonlife-threatening cutaneous herpes simplex virus infections in immunocompromised patients. The prophylactic use of this preparation has not been established.

In genital herpes, appropriate examinations should be performed to rule out other sexually transmitted diseases.

These indications are based on the results of a number of double-blind, placebo-controlled studies which examined changes in virus excretion, healing of lesions and relief of pain. Because of the wide biological variations inherent in herpes simplex infections, the following summary is presented merely to illustrate the spectrum of responses observed to date. As in the treatment of any infectious disease, the best response may be expected when therapy is begun at the earliest possible moment.

In immunocompromised patients, 93% were virus negative after 5 days of topical ZOVIRAX therapy, whereas only 35% of placebo recipients were virus negative at the same time.

In patients with herpes labialis, there was a significantly greater decrease in the amount of virus excreted after one day of therapy in those receiving ZOVIRAX within 8 hours of the onset of cold sores when compared to identically treated placebo patients.

Because complete re-epithelialization of herpes-disrupted integument necessitates recruitment of several complex repair mechanisms, the physician should be aware that the disappearance of visible lesions is somewhat variable and will occur later than the cessation of virus shedding. All immunocompromised patients who received topical ZOVIRAX had healed their lesions 23 days after the initiation of a 10-day course of therapy. 75% of placebo patients had healed lesions at that point. Some placebo patients continued to have visible lesions for more than 30 days.

Pain associated with herpes infections is highly variable in frequency and intensity. One hundred percent of the ZOVIRAX-treated immunocompromised patients were pain-free by day 23 versus 70% of placebo-treated patients.

Whereas cutaneous lesions associated with herpes simplex infections are often pathognomonic, Tzanck smears prepared from lesion exudate or scrapings may assist in the diagnosis. Positive cultures for herpes simplex virus offer the only absolute means for confirmation of the diagnosis.

CONTRAINDICATIONS: ZOVIRAX Ointment 5% is contraindicated for patients who develop hypersensitivity or chemical intolerance to any of the components of the formulation, such as polyethylene-glycol.

WARNINGS: ZOVIRAX Ointment 5% is intended for topical use only and should not be used in the eye or on mucous membranes.

PRECAUTIONS: The recommended dosage, frequency of application and duration of treatment of ZOVIRAX Ointment 5% should not be exceeded.

It is not known whether acyclovir is excreted in human milk.

Because many drugs are excreted in human milk, caution should be exercised when ZOVIRAX is administered to a nursing mother.

ZOVIRAX Ointment 5% should be used during pregnancy only if the physician feels the benefit will outweigh the possible harm to the fetus.

Safety of use of ZOVIRAX Ointment 5% in children has not been established.

There exist no data, at this time, which demonstrate that the use of ZOVIRAX Ointment 5% will prevent transmission of infection to other persons.

Since most cutaneous herpes simplex virus infections result from reactivation of latent virus, it is unlikely that ZOVIRAX Ointment 5% will prevent recurrence of infections when applied in the absence of signs and symptoms. ZOVIRAX Ointment 5% should not be applied in an attempt to prevent recurrences: application should commence only at the earliest prodromal sign of disease onset.

Although clinically significant viral resistance associated with the use of ZOVIRAX Ointment 5% has not been observed, this possibility exists.

ADVERSE REACTIONS: Because ulcerated genital lesions are characteristically tender and sensitive to any contact or manipulation, patients may experience discomfort upon application of ointment. In the controlled clinical trials, mild pain (including transient burning and stinging) was reported by 103 (28.3%) of 364 patients treated with ZOVIRAX Ointment 5% and by 115 (31.1%) of 370 patients treated with placebo; treatment was discontinued in 2 of these patients. Other local reactions among acyclovir-treated patients included pruritus in 15 (4.1%), rash in 1 (0.3%) and vulvitis in 1 (0.3%). Among the placebo-treated patients, pruritus was reported by 17 (4.6%) and rash by 1 (0.3%).

In all studies, there was no significant difference between the drug and placebo group in the rate or type of reported adverse reactions.

SYMPTOMS AND TREATMENT OF OVERDOSAGE: Overdosage by topical application of ZOVIRAX Ointment 5% is unlikely because of limited transcutaneous absorption.

DOSAGE AND ADMINISTRATION: Apply ZOVIRAX Ointment 5% liberally to the affected area 4 to 6 times daily for up to 10 days. A sufficient quantity of ointment should be applied to adequately cover all lesions. A finger cot or rubber glove should be used while applying ZOVIRAX in order to prevent

- (1) autoinoculation of other body sites or
- (2) transmission of infection to other persons.

Therapy should be initiated as early as possible following onset of signs and symptoms.

AVAILABILITY: ZOVIRAX Ointment 5% is available in tubes of 4 g and 15 g. Each gram contains 50 mg acyclovir in a polyethylene-glycol base. ZOVIRAX Ointment 5% is for topical administration.

Product Monograph available on request.

Reference:

1. Whitley RJ, Levin M, Barton N, et al: Infections caused by herpes simplex virus in the immunocompromised host: Natural history and topical acyclovir therapy. *J Infect Dis* 1984;150:323-329.

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Announcements

January/Janvier 1990

January 14-20: Midwinter Dental Meeting of the Barbados Dental Association in Bridgetown. Contact: Mrs. Alison Hoad, Gardiner Austin Travel, Ridge House, Cavan Lanes, Bridgetown, Barbados.

January 17-21: Yankee Dental Congress Gateway to the Future in Boston, Mass. Contact: Massachusetts Dental Society, 83 Speen St, Natick, MA 01760-4125, USA, or tel: (508) 651-7511.

January 20-25: XIV Congresso Paulista de Odontologia, XXVIII Seminario Odontologico Latino-Americano, II Congresso Universitario Paulista de Odontologia in Brazil. Contact: Dr. Joao Vieira de Moraes, President, Associacao Paulista dos Cirurgioes Dentistas, Rue Humaita, 389 - Bela Vista C.P. 2523, CEP 01321 Sao Paulo, Brazil. Tel: 37-4194.

January 20-27: 24th International Alpine Dental Conference in Courchevel, France. Contact: LW Bryer, 24 Cadogan Square, London, SW1X 0JP, England.

January 20-27: XXIII Congreso de FOCAP in Atlapa, Panama. Contact: Dr. Ricardo Arango, president, XXIII Congreso internacional de FOCAP, PO Box 6777, Panama 5, Panama.

January 24-27: First World Endodontic Congress in Mexico City. Contact: Dr. Jose Oynick, Prado Sur 480, Lomas Virreyes, Mexico 11000 DF, Mexico.

January 26-28: I International Dominican Congress of Pediatric Dentistry, II Congress of the Ibero-American Association of Pediatric Dentistry, V Dominican Congress of Pediatric Dentistry in Santo Domingo, Dominican Republic. Contact: Centre of Pediatric Dentistry, PO Box 2753, Santo Domingo, Dominican Republic or tel: (809) 689-4277.

February/Février 1990

February 1-3: Miami Winter Meeting For more information, contact: East Coast District Dental Society, 420 S Dixie Hwy, 2-E, Coral Gables, FL 33146, USA. (305) 667-3647.

February 2-9: Alpha Omega International 6th Annual Winter Seminar in Lake Tahoe, Nevada. Contact: Alpha Omega Fraternity, 2016 Bathurst St, Toronto, Ont M5P 3L1.

February 10: XI PSI PHI Founder's Day Celebration Day meeting and evening formal at the Royal York, Toronto. Contact: Dr. John Wiles, 4190 Finch Ave E, Suite 407, Scarborough, Ont. M1S 4T7. Tel: (416) 293-3336.

February 10-11: 33rd Annual Meeting of the Midwest Society of Periodontology in Chicago. For additional information and preregistration forms, contact: Midwest Society of Periodontology, Suite 212, 1775, Glenview Rd, IL 60025, USA. Tel: (708) 724-6396.

February 11-14: 125th Midwinter Meeting of the Chicago Dental Society. Contact: Chicago Dental Society, 401 N Michigan Ave, Chicago, IL 60611, USA.

February 18-22: Annual Scientific Convention of the Dental Association of Trinidad and Tobago. Contact: The Honourary Secretary, 115 Abercromby St, Port-of-Spain, Trinidad and Tobago.

February 23-27: 26th National Convention of the Jamaica Dental Association. Contact: Dr. Susan Lawrence-Beckford, Chairperson, Convention Committee 1990, Jamaica Dental Association, PO Box 19, Kingston 5, Jamaica West Indies.

February 24-March 3: Virgin Islands Dental Association Convention in St. Thomas. For convention preregistration, travel and accommodation at group rates, please contact: Dr. Bob Brandon at (519) 657-3368.

March/Mars 1990

March 4-7: 67th Annual Session of the American Association of Dental Schools in Cincinnati. For information, contact: American Association of Dental Schools, 1625 Massachusetts Ave NW, Washington, DC 20036, USA. Tel: (202) 667-9433.

March 7-11: International Association for Dental Research in Cincinnati, Ohio. Contact: Ms. Judith A. Gauchel, Scientific Program/Meeting Mgr, 1111-14th St NW, Suite 1000, Washington, DC 20005 USA. Tel: (202) 898-1050.

March 8-9: The 9th Jordanian Dental Congress in Amman. Contact: Dr. Irfan Sultan, Chairman, Scientific Committee, PO Box 1326, Amman, Jordan.

March 9-11: National Conference for the AIDS Caregiver in Canada in Ottawa. For information and registration materials, please contact: Bruce Mills, Conference Facilitator, 1589 St Bernard St, Gloucester, Ont K1T 3H8.

March 14-16: The 4th World Dental Congress of the Egyptian Clinical Dental Society in Cairo. Contact: Prof. Avd Elahdi Nasif Selim, College of Dentistry, Cairo University, Cairo, Egypt.

March 16-18: National Conference for the AIDS Caregiver in Canada in Calgary. For information and registration materials, please contact: Bruce Mills, Conference Facilitator, 1589 St Bernard St, Gloucester, Ont K1T 3H8.

March 24-31: 25th International Alpine Dental Conference in Courchevel, France. Contact: LW Bryer, 24 Cadogan Square, London, SW1X 0JP, England.

March 26-30: Hawaiian Symposium on Endodontics & Periodontics sponsored by the Alberta Academy of General Dentistry and the Edmonton Multidisciplinary Dental Study Club. Contact: Dr. Eugene Dalla Lana, 206-1305-11 Avenue SW, Calgary, AB T3C 3P6 or tel: (403) 244-4867.

March 28-30: Big Apple New York Dental Meeting. Contact Dr. Leslie Zucker, 3201 Grand Concourse, Bronx NY 10468, USA.

March 28-31: Annual Dental Meeting of the Finnish Dental Society in Finland. Contact: Taru Ohtola, Training Mgr, Committee for Continuing Education, Akavatalo, Rautatienkatu 6 SF-00520 Helsinki, Finland.

March 29-31: 56th Annual Scientific Meeting of the Danish Dental Association and the Scandinavian Dental Fair SCANDEFA 90 in Denmark. Contact: Danish Dental Association, Committee for Postgraduate Education, 17 Ameliegade, Postbox 143, DK-1004, Copenhagen K, Denmark.

March 31-April 6: Annual Meeting of the Canadian Association of Oral and Maxillofacial Surgeons in Whistler, BC. ORAL IMPLANTS - Trouble shooting for successful attached prosthesis. Contact: Dr. Mike Kaburda, 208-600 Royal Ave, New Westminster, BC V3M 1J3.

April/Avril 1990

April 1-6: VIth World Congress on Pain in Adelaide, Australia. For information: International Association for the Study of Pain, 909 NE 43rd St, Suite 306, Seattle, WA 98105-6020 USA. (206) 547-6409.

April 25-29: American Association of Endodontists. For more information, contact: Ms. Irma S. Kudo, 211 E Chicago Ave, Suite 1501, Chicago, IL 60611, USA.

May/Mai 1990

May 3-5: ODA Annual Spring Meeting to be held at the Metro Toronto Convention Centre is looking for clinicians. All members of the dental team are invited to participate and share their expertise. For an application form, please contact: Diana Thorneycroft, ODA, 234 St. George St, Toronto, ONT M5R 2P1.

May 4-6: British Dental Surgery Assistants Jubilee Conference in Solihull. For information, contact: DSA House, 29 London St, Fleetwood FY7 6JY, England. Tel: 039-17-78631.

May 16-19: International Dental Congress of the British Dental Association at Barbican Centre in London. Contact: British Dental Association, 64 Wimpole St, London W1M 8A1, England or tel 01 935 0875.

May 16-19: 3rd North Sea Conference on Periodontology in Maastricht, The Netherlands sponsored by the British, Dutch and Scandinavian Societies of Periodontology. For more information, contact: Dutch Society of

Periodontology, PO Box 24, 9649 ZG Muntendam, The Netherlands.

May 17-19: Congrès de la Société Suisse d'Odontostomatologie SSO in Montreux, Switzerland. Contact: D' Pierre Spahn, 51 av du Casino, CH-1820 Montreux, Switzerland.

May 20-24: Les Journées dentaires du Québec in Montréal. Contact: Chantal Bally, 625 boul René-Lévesque ouest, Montréal, Qué H3J 1Y2.

May 28-31: The Impact of Lasers on Dental Science in Paris, France. Contact: Lasers 1990 Scientific Secretariat, Faculté de Chirurgie dentaire, 1 rue M. Arnoux, F-92120 Montrouge, France.

June/Juin 1990

June 2-4: XI^{èmes} Journées françaises de Parodontologie in Cannes, France. Contact: Dr. Catherine Mattout, 21 rue Sylvabelle, 13006 Marseille, France.

June 14-15: Fundamentals of Orofacial Myology with Marvin L. Hanson in Ottawa. Contact: Barbara Okun, Dept of Speech and Language Disorders, Ottawa Civic Hospital, 1053 Carling Ave, Ottawa, Ont K1Y 4E9. Tel: (613) 761-4722.

June 19-22: 96th Annual Meeting of the American Dental Society of Europe in St. Andrews, Scotland. Contact: Dr. Clive Debenham, American Dental Society of Europe, 1 Harley St, London W1N 1DA, England.

June 25-29: 81st Annual Conference of the Canadian Public Health Association in Toronto. Contact: CPHA, 1565 Carling Ave, Suite 400, Ottawa, Ont K1Z 8R1. Tel: (613) 725-3769.

July/Juillet 1990

July 2-5: International Association of Oral Pathologists in Tokyo. For information, contact: Dr. W.H. Binnie, Baylor College of Dentistry, 3302 Gastor Ave, Dallas TX 75246, USA.

July 11-14: 37th Annual Congress of the European Organization for Caries Research in Ljubljana, Yugoslavia. For details, contact: Dr. V. Vrbic, University kliny Ctr. Ljubljana, Mrvatski TRG 6, Y-61000, Ljubljana, Yugoslavia.

July 6-7: International College of Dentists, European Section in London. Contact: Dr. B.D. Glynn, 35 Devonshire Pl, London, W1N 1PE, England.

August/Août 1990

August 24-28: 15th Biennial Conference of the New Zealand Dental Association in Dunedin, New Zealand. For information, contact: Conference Secretary, PO Box 647, Dunedin, New Zealand.

August 25-28: Congress of the Association of Dental Education in Europe in Budapest, Hungary. For details, contact: Prof. Jolan Banoczy, Mikszath K ter 5, H-1088 Budapest, Hungary.

September/Septembre 1990

September 2-6: 10th Congress of the International Association of Dentistry for the Handicapped in Nice. Contact: Prof J.R. Jasmin, Université de Nice, UFR Odontologie, Faculté de Chirurgie dentaire, av Joseph Vallot, Parc Valrose, 06034 Nice, France.

September 5-7: 7th Biennial Congress of the International Academy of Gnathology (Asian Section) in Singapore. Contact: The Secretariat, IAG-7th Annual Congress, Communication International Assoc Pte Ltd, 450 Alexandra Rd, #10-00 Inchapec House, Singapore 0511.

September 10-14: 10th Congress of the European Association for Cranio-Maxillo-facial Surgery in Brussels. Contact: Mrs. H. van Leemputten, rue Joseph Stallaert 28, B-1180 Brussels, Belgium.

September 17-20: 4th Meeting of International Academy of Periodontology in Istanbul. Contact: Mr. M. Midda, University of Bristol, Dental School and Hospital, Lower Maudlin St, Bristol BS1 2LY, England.



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BRITISH COLUMBIA: In the scenic south central interior, a short three-hour drive from Vancouver. A well-established, private family practice for sale offering professional satisfaction and sound investment opportunity. Computerization under way; independent evaluation available; opportunity for investment in dental building; will associate to ensure smooth transition. Ideal family community with excellent year-round recreation. Please reply to CDA Box 2468.

BRITISH COLUMBIA—Fraser Canyon: Unopposed practice and satellite office for sale. Same owner for 25 years. Presently operated half time but could become full time. High gross, very low overhead, owner retiring. For full details, phone (604) 669-4648 (home) or write: Box 717, 1755 Robson St, Vancouver, BC V6G 3B7.

BRITISH COLUMBIA—Gold River, Vancouver, Island: Well-established, 3-operatory office for sale. All adjuncts including panorex and cep. Extremely busy with corresponding gross income. Town is in the midst of well-founded expansion auguring well for the future. Reply to CDA Box 2467.

BRITISH COLUMBIA—New Westminster: Well-established, adult practice in excellent med/dent building. Two operatories, laboratory, private office, store-room. Large recall system. 25 minutes from Vancouver. Call office Mon, Tues or Thurs at (604) 522-1911 or home any-time at (604) 521-8620.

BRITISH COLUMBIA—Pender Harbour: FOR SALE. Busy part-time general practice for sale on beautiful Sunshine Coast close to the natural elements. Two hours travel time from Vancouver. Strong recall/maintenance program and good new patient growth. Ideal for new grad or for a working retirement. Call after 7 pm. Dr. Dan Kingsbury at (604) 886-4535.

BRITISH COLUMBIA—Vancouver: Enjoy the great West Coast lifestyle! Very busy, growing family practice for sale. High gross, 28 hour work week, shared office for great net. 3 modern, equipped operatories, with ceiling tv's, Exan computer system for 5 years. Not inexpen-

sive, but worth it! Serious calls only please. (604) 732-0944.

BRITISH COLUMBIA—Vancouver: Space for lease. Dentist — Dental Specialists. Vancouver Centre — truly the heart of the downtown core, in a triple A building, the Scotia Tower, next to the sky train route. Medical/Dental floor already leased for general dentistry, pediatric dentistry, oral and maxillo-facial surgery, orthodontics, part-time periodontist and physicians. Please contact Gene Cherneski at (604) 684-7537 for leasing information.

BRITISH COLUMBIA—Vancouver Suburb: Practice for Sale. Busy, family practice established more than 15 years. Attractive office, recently relocated to new building with good exposure, 3 ops of new equipment. Principal dentist and one associate. Well-organized office, very experienced staff who completely manage the practice. Phone: (604) 531-5222.

ALBERTA: Thirty-year-old general practice for sale. Excellent opportunity for new graduate. Location in major shopping centre. Retiring. Serious calls only please. Days (403) 255-6926. Evenings (403) 255-7876.

ALBERTA—Edmonton: Established, busy, general practice for sale. Owner returning to school. Modern, organized, spacious and esthetic office located in downtown professional building with low rent and good access. Full-time hygienist, receptionist and two assistants. Excellent cash flow. Phone (403) 426-6047 evenings.

ALBERTA—Edmonton: Practice for Sale. Excellent opportunity for established dentists or new graduates. Modern, 5-operatory general practice located in downtown professional building. Owner returning to school. Phone (403) 465-5035 or 467-6887 after 6 pm.

ALBERTA—Hythe: Dentist wanted for fully-equipped clinic located in northern Alberta between the cities of Dawson Creek and Grande Prairie. Excellent skiing and fishing and a full range of community facilities. Town has new hospital. Two doctors and drugstore share building. Practice volume is 3-4 days per week. For complete information contact: Jacqueline Lee, Box 280, Hythe, AB T0H 2C0. Telephone (403) 354-8255 (res).

ALBERTA—Red Deer: Practice premises for sale. Owner relocating in same city. Leaseholds and some equipment available in a 10-year-old mall. 1380 sq ft; 5 operatories. Excellent location. Contact B. Fleming at (403) 346-8443.

SASKATCHEWAN: Very busy, family-oriented practice for sale or associateship leading to purchase in small Saskatchewan city. Four fully-equipped operatories, including panelipse. Large patient base makes it suitable for 2 new graduates or 1 experienced dentist. Very reasonable selling price. Reply to CDA Box 2420.

MANITOBA—Winnipeg: Family-oriented practice for sale. Three fully-equipped operatories in a modern 1000 sq ft facility. Good gross and excellent net. Apply in confidence to CDA Box 2470.

MANITOBA—Winnipeg: Well-established, busy practice for sale. High gross, low overhead. Excellent downtown location. Newly decorated operatories. Third party assessment done. Please write to PO Box 25124 c/o 1650 Main St, WPG, Man R2V 4C7.

ONTARIO: Just east of Toronto — long-established family practice for sale. Owner contemplating retirement. Approx. 1200 sq ft in professional bldg, 2 ops completely equipped — two more plumbed/wired. Please contact CDA Box 2466.

ONTARIO: Busy, established, family practice for sale in small town near Lake Huron. Modern 30' x 50' building, air conditioned, two well-equipped operatories. Reception and business areas, lab, kitchen, bathroom, private office and staff room (or third operatory). Very competent, well-trained staff available with practice. Excellent income, low overhead. Please call (519) 482-5864.

ONTARIO—Hamilton: New, modern office in rapidly growing area. Presently used as office for MD. Lots of free parking. Excellent lease terms. Spacious 1200 sq ft with 4 available rooms all plumbed. Available after January 1990. Phone (416) 574-1212.

ONTARIO—Ottawa: Attractive, fast-growing practice for sale. Excellent location in busy shopping plaza with high visibility. 1350 sq ft, 2 full operatories,

panorex, 3rd operatory plumbed and N₂O₂ available. IV sedation in use. Growing crown and bridge. 90 per cent insurance. Tel: (613) 523-5701 (home).

QUÉBEC—Montréal: Established family practice and newly renovated building. Excellent location. Facing Metro. Two operatories. Private parking. (514) 276-8884 or 457-5542. Sale.

QUÉBEC—Shawinigan: Bureau avec 2 salles opératoires complètement équipées. Ce bureau est en excellent condition. Très bon achalandage et beaucoup de dossiers. Peut-être transféré immédiatement. Tél (819) 535-1333 ou (819) 568-9195.

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NOVA SCOTIA—South Shore: Established practice (17 years) for sale in modern facility. For further details, phone (902) 634-8880 or write Dr. Robert Murray, Lunenburg Medical/Dental Centre, PO Box 370, Lunenburg, NS B0J 2C0.

NOVA SCOTIA—Sackville: Situated 20 minutes from Halifax in enclosed mall in developing suburban area. 3-year-old practice with good rent & lease arrangements. Excellent new patient flow and 1700 active patients. Dentist wishing to consolidate effort in other existing practice. Priced for immediate sale. (902) 466-5484.

Associateships Available

BRITISH COLUMBIA: "New State of the Art" private practice located in Vancouver's newest and most exciting mall is looking for a very special associate. Video imaging, ultra-modern equipment, extended hours — we have it all! Call City Square Dental Care at (604) 876-4537 if you would like to be on our team.

BRITISH COLUMBIA—Chilliwack: Associateship with view to partnership available to dentist committed to continu-

ing education and excellence in patient care. Busy practice located one hour east of Vancouver in beautiful Fraser Valley. Area offers skiing, hiking, boating and mild climate. Present associate returning to school after having busy practice for 3½ years. For further information, contact Dr. Michael Thomas, 102-45625 Hodgins Ave, Chilliwack BC V2P 1P2 or call (604) 792-0021 (office) or (604) 795-9818 (residence).

BRITISH COLUMBIA—Duncan: Full-time associate required for flourishing, well-established group practice to assume patients of retired partner. Opportunity for future partnership. Hospital privileges available. Experience preferred. Duncan is located 40 minutes from Victoria in the scenic Cowichan Valley where recreational opportunities abound — boating, skiing at Mt. Washington, outdoors activities, golfing. Contact Dr. Chilibeck or Wang at (604) 748-8141.

BRITISH COLUMBIA—Williams Lake: Full-time Associate Wanted. Busy, well-equipped family practice with good support staff including hygienists. Phone — Alistair Menzies (O) (604) 398-7161 or (H) 392-2615 collect.

ALBERTA: ASSOCIATESHIP/PARTNERSHIP Exceptional opportunity available for an associate in a busy general practice. To assume full patient load. One hour from Edmonton. Partnership opportunity available. Excellent support staff and great up-to-date facility. Call Dr. Darryl Schultz at (403) 672-9118.

ALBERTA—Calgary: Quality associateship available January 1. Excellent opportunity in established practice. New 2500 sq ft location only 1½ year old. Present associate leaving end of December. Potential buy-in for right person. (403) 281-4266 or 256-4265.

ALBERTA—Edmonton: Full-time associate required for busy mall practice. Well-equipped with 3 full operatories and pan. Excellent opportunity for new graduate or established practitioner. Partnership opportunity. Reply to: Dr. J.H. Haymour (403) 474-4887.

ONTARIO—Ottawa: Associateship available in a modern dental centre. Initial part-time increasing to full-time in spring of 1990. Definite partnership possibilities available. Call Dr. Alan Bridges (613) 225-4208.

ONTARIO—Ottawa: Experienced dentists to associate in well-established

general practice. Option to purchase to be included in associateship agreement. Excellent opportunity for right person. Reply to CDA Box 2460.

ONTARIO—Sudbury: Full-time associate required to practice between 2 offices. One storefront with 2 optometrists and 2 veterinarians, the other in a medical/dental building with a library, pharmacy and medical doctor. Am the only dentist servicing about 5000 people. 40-60 per cent associate percentage offered. Call (705) 522-4252.

ONTARIO—Toronto: Oral and Maxillofacial Surgeon wanted to associate with view to a partnership in group practice. Reply in confidence to CDA Box 2417.

Auxiliaries

ONTARIO—Waterford: Hygienist required immediately. 3 days per week. Remuneration excellent based on experience. Within 30 minutes of the city of Brantford. Please call or write to: Box 850, Waterford, Ont NOE 1Y0. Tel: (519) 443-8648.

Opportunities Available

ALBERTA—Calgary: General downtown family practice for sale. Full-time or part-time associateship available with option to purchase. Three fully-equipped operatories, active recall system and steady new patient flow. Low overhead with good gross. Reply in writing to: PO Box 9331, Station F, Calgary, AB T2J 6Y1.

ALBERTA—Calgary: Full-time and part-time associates required immediately for various locations. Please call Dr. Lim (403) 288-4466 or evenings (403) 239-6602.

MANITOBA: Very busy, modern, computerized office needs associate/partner. High gross, low overhead, very friendly, efficient staff. Young dynamic city of Thompson in the heart of beautiful lake country. Golf, ski within 5 miles. Golden opportunity for ambitious dentist. Phone (204) 677-4526.

ONTARIO: Dental Technician (RDT) to share cost/set up laboratory within prosthodontist's office. Must be expe-

rienced in all laboratory procedures. My work will occupy 60-70 per cent of your time. (416) 322-6862.

ONTARIO: PERIODONTIST or ENDO-DONTIST WANTED to share existing office with Oral Surgeon in Georgetown and Orangeville. Call Dr. J. Levitz at (416) 279-9971.

ONTARIO: ORAL AND MAXILLO-FACIAL SURGEON. Exceptional opportunity for enthusiastic, motivated, skilled individual in busy, prestigious, well-established, broad-based practice. If you're that special surgeon who would like to live in a nice community, enjoy outstanding quality of life, leading to partnership with excellent income potential. Please contact CDA Box 2458.

ONTARIO: LOCUM/ASSOCIATE REQUIRED Busy family practice centred in the scenic Ottawa Valley, requires locum/associate to work in modern computerized office with pleasant staff. Have the luxury of both country and city living just one hour from Ottawa. Fishing, hiking, skiing and watersports are within 15 minute drive. For more information, contact (613) 432-4864 after 6 pm or 432-6916.

ONTARIO—North Toronto: Position available immediately for a paediatric dentist with Ontario certification in a modern, well-established private practice. Full range of dental care provided from preventive to orthodontic services; well care and special needs (mentally and physically compromised) children and adolescents. Associateship with future prospects for partnership or cost-sharing arrangement. Please reply to CDA Box 2426.

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Interplak	971
Medi-Dent Services Ltd.	979
Ontario Ministry of Health	980
Plax	972, 973
Premier Dental (Canada) Inc.	964
Procter and Gamble, Inc.	932
Progressive Solutions	980
Royal College of Dentists of Canada	984
Semantodontics	986
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Viaguard Pharmaceuticals	964
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JOURNAL

The Freeloading Puzzle

Have you ever tried to explain the meaning of the phrase "organized dentistry" to an interested but non-dental audience. I recently had such an opportunity (challenge?) at the University of Western Ontario. The occasion was one of the "Welcome to the Profession" receptions co-sponsored annually by the Canadian Dental Association and provincial dental associations at each of the ten Canadian dental schools.

It should be stated that in Ontario and Quebec where membership in dental associations must be voluntary (by government statute), the "Welcome to the Profession" session is particularly important. The associations wish to impress early in a dental student's career the importance of sustaining a strong life-long dental association affiliation.

In my role representing the CDA president I found myself in front of a class of 46 eager, bright, and to my eyes, very young looking first year dental students. Because of their lack of dental experience, (and the very few minutes I had to define my points), I assumed there was no use talking about the numerous issues of CDA so familiar to us. The goods and services tax, capitation, third party relations, EDI, would just be more confusing terms.

The publication of a refereed dental journal, a CDSPI sponsored insurance plan that is one of the finest in the world and a national system of accreditation allowing dental graduates to obtain licences in Canada with a minimum of hassle might invoke some interest, but direct application to graduation four years hence must seem a long way off.

So the dilemma: how to explain *why* they should as students, join the CDA *today* to become part of organized dentistry, and then continue to maintain membership once they become dentists.

What is this thing called "organized dentistry" and why should anyone spend hard earned dollars to become part of it? The occasion certainly made me pause and think upon why I joined, and to reflect upon my own hard won experiences in learning some of those important principles.

I believe, and yes, I know today more than ever before, that if we are *not* a united organized profession there are forces present that will surely put short shrift to professionalism as we know it. Our ability to provide the best oral health care anywhere in the world could be seriously diminished. This professional unity is achieved at three levels — local dental societies, provincial dental associations and the Canadian Dental Association.

I told the students they would inevitably become familiar with the forces present in our professional lives; the federal government, provincial governments, the insurance industry, the universities, the dental supply industry and dental auxiliary associations, to name but a few. They would eventually have to learn these realities (which very few dentists fully appreciate) the hard way.

I impressed upon them the most effective influence of our three level organization as a profession is modifying and altering those external forces and realities. Dentists then can continue to do that for which they are best trained — deliver the finest possible oral health care to our patients.

If they were sceptical of what I told them, and certainly a healthy scepticism should be part of any good student's make-up, I offered proof and examples of what happens when dentists are not organized and do not have an organization that allows them to speak with one strong voice. I simply suggested they could find the consequences by looking south of the border and speaking to their American colleagues.

The one thing I did not speak about to those interested but novice professionals was something I personally do not understand. Despite all the advantages and benefits of organized dentistry at a national level, why do almost fifty per cent of our colleagues in Ontario and Quebec "freeload" by **NOT** choosing to join the Canadian Dental Association?

The answer to this query has always eluded me. I hope this year, more than ever before, the results of our membership campaign in Ontario and Quebec will be such that I no longer have to pose the question.

Bernard Dolansky, DDS, MSc.

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